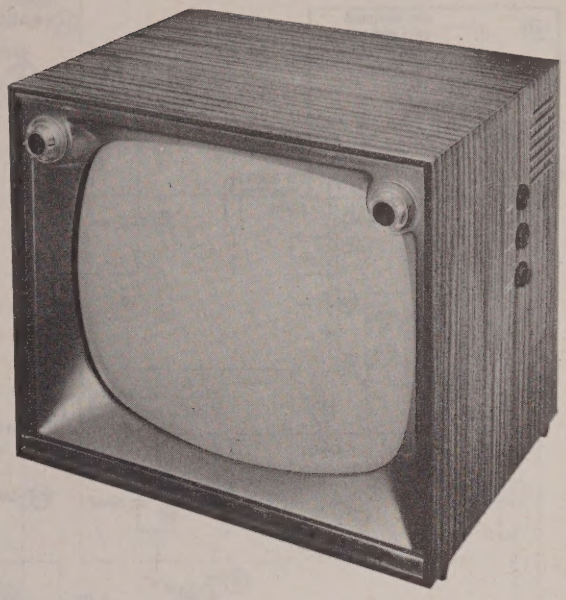
DISASSEMBLY INSTRUCTIONS



CHASSIS REMOVAL

1. Remove 2 push-on type knobs from the front and 3 from the side.
2. Remove 6 metal screws holding the rear cover. Remove the rear cover.
3. Remove 4 metal screws holding the tuner bracket.
4. Release the spring clip holding the On-Off-Volume control.
5. Remove the picture tube socket, HV lead, yoke plug and speaker leads.
6. Remove 4 chassis bolts from the bottom.
7. Remove the chassis.

TRADE NAME	Dumont	CHASSIS	RA-402, RA-403
MANUFACTURER	Allen B. Dumont Laboratories, Inc., 257 Sixteenth Ave., Paterson, N.J.		
TYPE SET	Television Receiver		
TUBES	Seventeen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING	185 Watts, 1.77 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible through a hole in the rear cover of the tuner as the Channel Selector is rotated. Set the Fine Tuning at the center of its range. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 2 push-on type knobs from the front. Remove 4 metal screws holding the trim strip at the top of the safety glass. Tilt glass out at the top and lift up to remove.

FOCUS

No provision is made to vary the focus on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Set Horizontal Hold to the center of its range. Adjust Horizontal Stabilizer until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz Control for MINIMUM buzz and maximum sound. (For location, see tube placement chart.)

FUSES

One fuse is used for horizontal sweep circuit protection. (For location, see tube placement chart.)

FUSE DEVICE

A 1" length of #26 wire is used for filament protection.

CENTERING

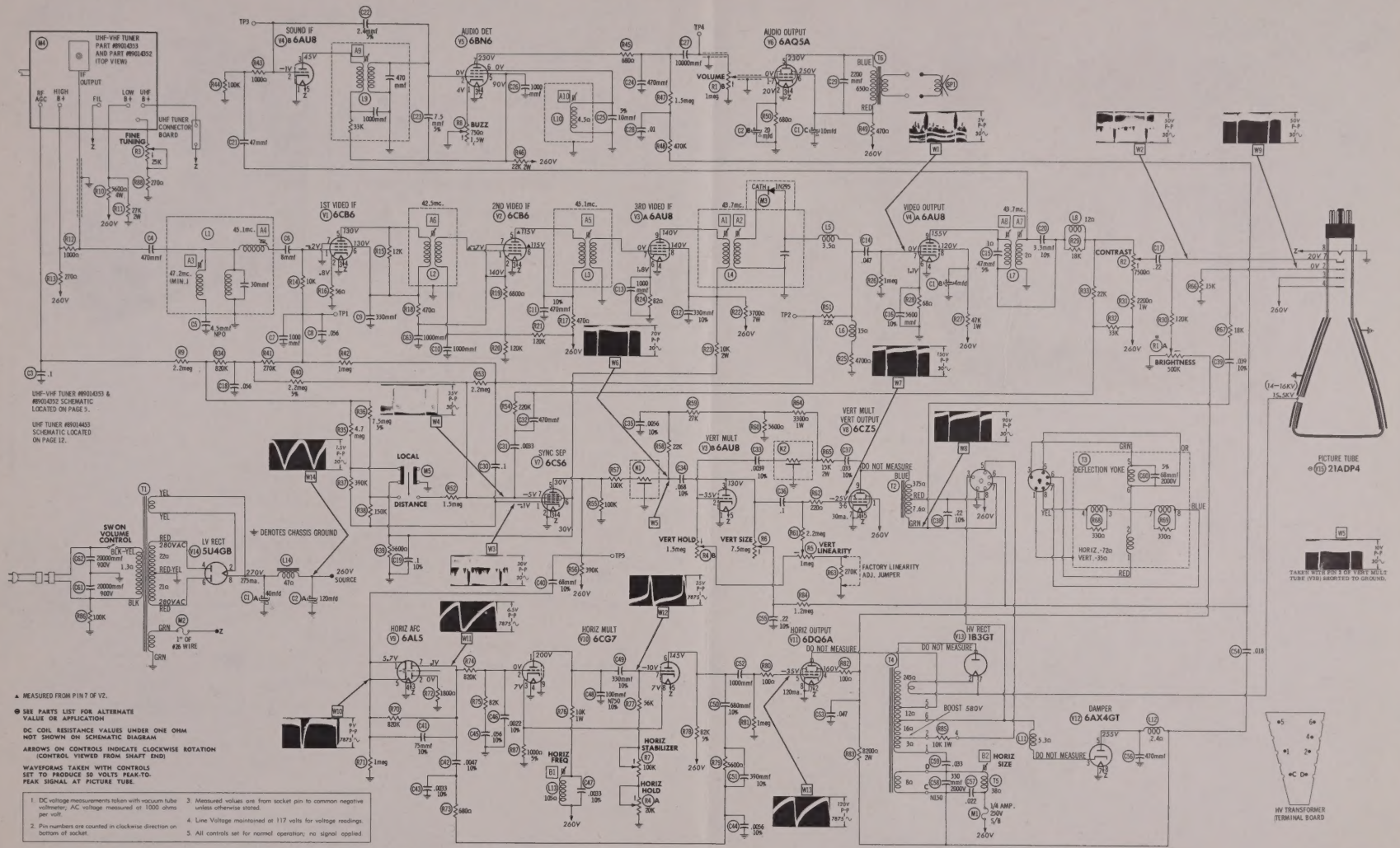
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

DUMONT CHASSIS
RA-402, RA-403

SET 408 FOLDER 1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

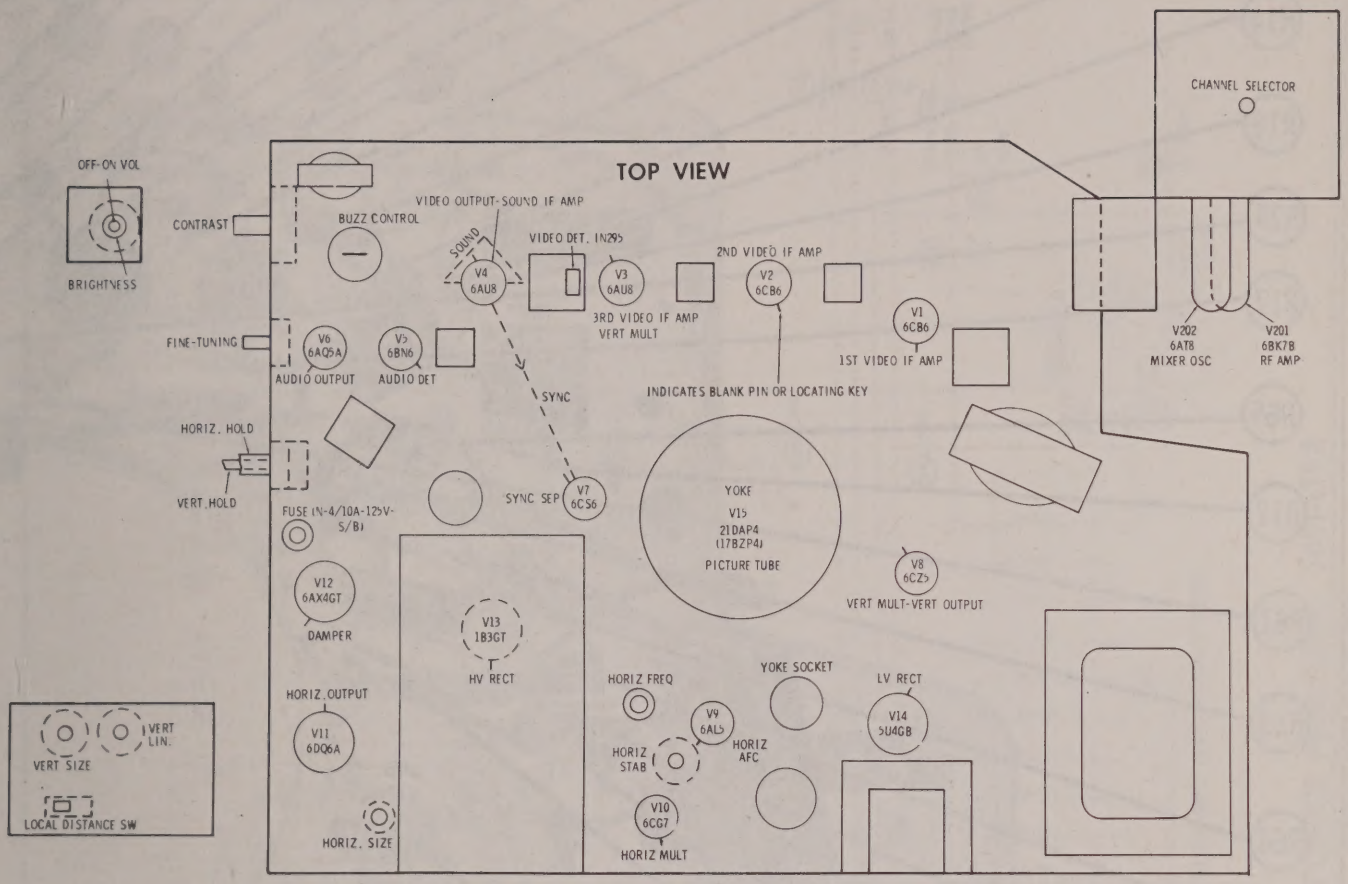
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America


UHF-VHF TUNER PART #90014353 AND PART #90014352 (TOP VIEW)
SOUND IF V4 6AU8
AUDIO DET V5 6BN6
AUDIO OUTPUT V6 6AQ5A
1ST VIDEO IF V1 6CB6
2ND VIDEO IF V2 6CB6
3RD VIDEO IF V3 A 6AU8
VIDEO OUTPUT V4 A 6AU8
VERT MULT V3 6AU8
VERT MULT VERT OUTPUT V8 6CZ5
SYNC SEP V7 6CS6
HORIZ AFC V9 6AL5
HORIZ MULT V10 6CG7
HORIZ OUTPUT V11 6DQ6A
HV RECT V13 1B3GT
DAMPER V12 6AX4GT
LV RECT V14 5U4GB
PICTURE TUBE V15 21ADP4
CONTRAST
BRIGHTNESS 500K
VOLUME
BUZZ
FINE TUNING
LOCAL
DISTANCE
VERT HOLD 1.5meg
VERT SIZE 7.5meg
VERT LINEARITY 1meg
FACTORY LINEARITY ADJ. JUMPER
HORIZ STABILIZER
HORIZ FREQ
HORIZ HOLD 20K
HORIZ SIZE
BOOST 580V
DEFLECTION YOKE
HORIZ. -72ω
VERT. -35ω
SW ON VOLUME CONTROL
DENOTES CHASSIS GROUND
260V SOURCE
DO NOT MEASURE
TAKES WITH PIN 2 OF VERT MULT TUBE (V8) SHORTED TO GROUND.
HV TRANSFORMER TERMINAL BOARD
UNF-VHF TUNER #90014353 & #90014352 SCHEMATIC LOCATED ON PAGE 5.
UHF TUNER #90014453 SCHEMATIC LOCATED ON PAGE 12.
▲ MEASURED FROM P IN 7 OF V2.
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

DUMONT CHASSIS
RA-402, RA-403

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

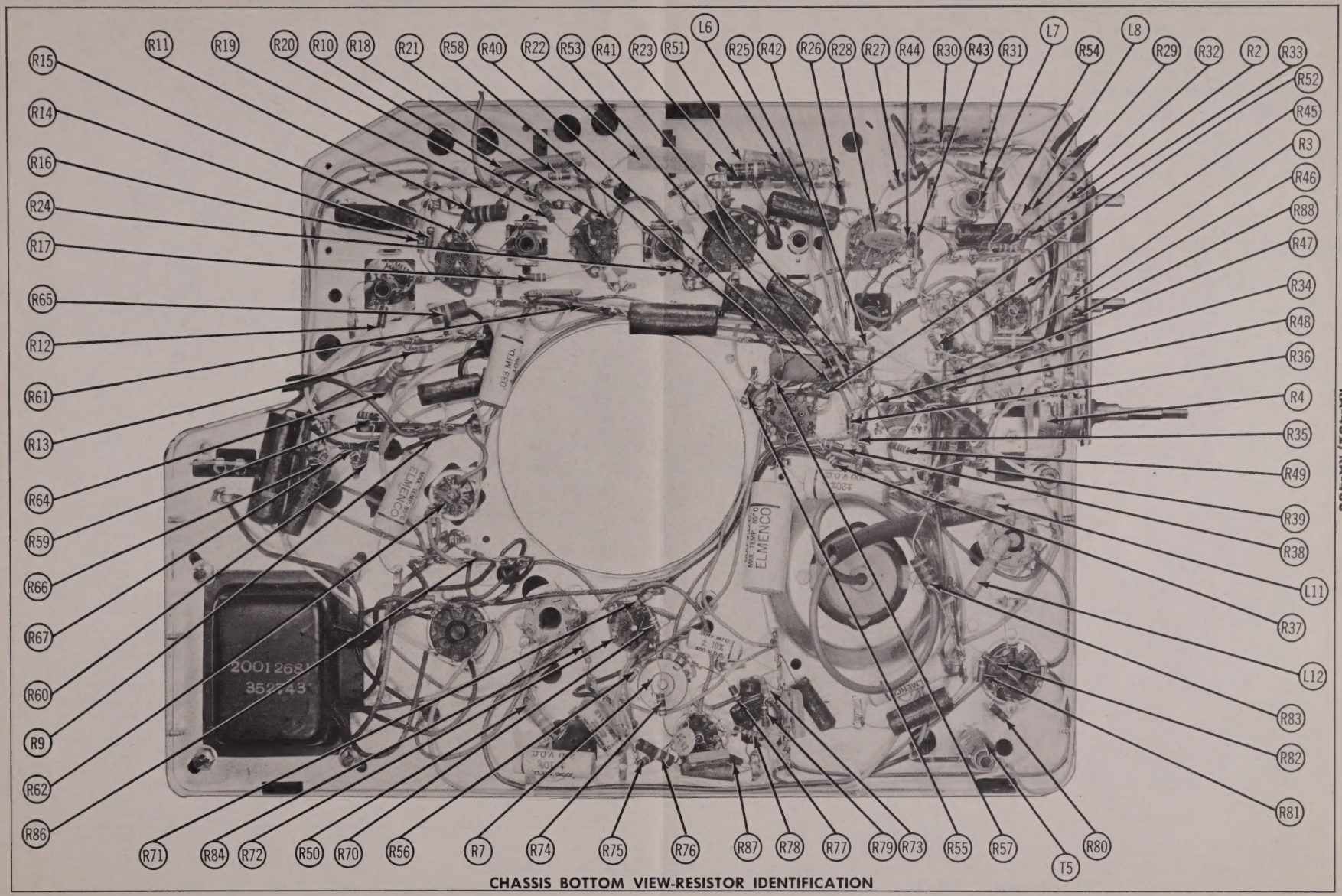
The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound V14, Fuse Wire (M2)

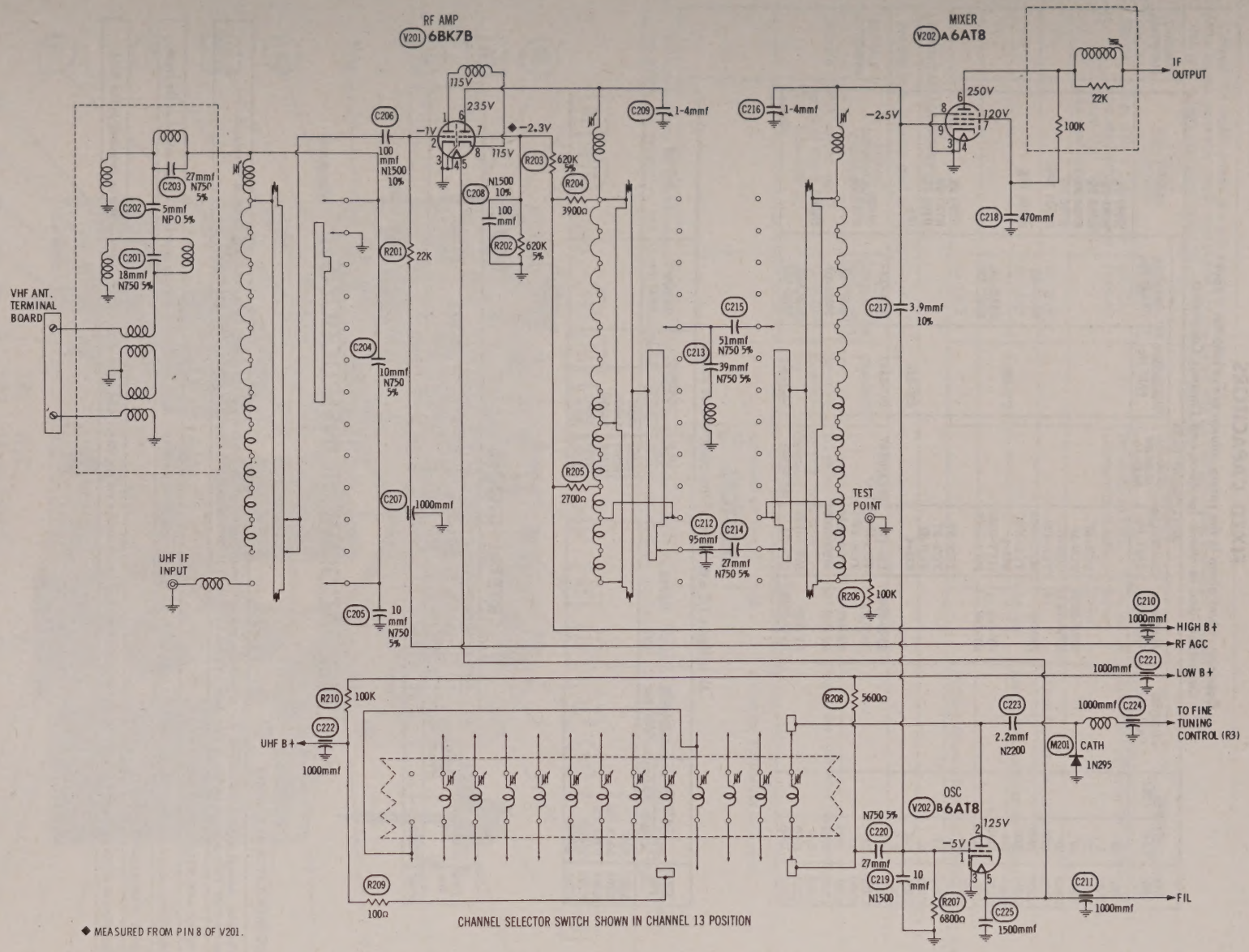
SWEEP FAILURE
No raster, has sound Fuse (M1), V9, V10, V11, V12, V13, V15
No vertical deflection V3, V8
Poor vert. linearity or foldover V3, V8
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, V14
Vert. off freq. V3, V8
Horiz. off freq. V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M3), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V4, V5, V6

SYNC FAILURE
No vert. sync V7
No horiz. sync V7, V9
No vert. or horiz. sync V7



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF-VHF TUNER #89014353, 89014352

DUMONT CHASSIS RA-402, RA-403

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	6BK7B	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6AT8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	18								N750 5%
C202	5								NPO 5%
C203	27				TCN-27				N750 5%
C204	10			N750-DI 10	TCN-10				N750 5%
C205	10			N750-DI 10	TCN-10				N750 5%
C206	100				TCL-100				N1500 10%
C207	1000			EF-001	MFT-1000			503C-D1	
C208	100				TCL-100				N1500 10%
C209	1-4				829-4		CT-551		
C210	1000			EF-001	MFT-1000			503C-D1	
C211	1000			EF-001	MFT-1000			503C-D1	
C212	95								
C213	39				TCN-39				N750 5%
C214	27				TCN-27				N750 5%
C215	51				TCN-51				N750 5%
C216	1-4				829-4		CT-551		10%
C217	3.9								
C218	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C219	10				TCL-10				N1500
C220	27				TCN-27				N750 5%
C221	1000			EF-001	MFT-1000			503C-D1	
C222	1000			EF-001	MFT-1000			503C-D1	
C223	2.2								N2200
C224	1000			EF-001	MFT-1000			503C-D1	
C225	1500			BPD-0015	DD-152	BYA10D5	DC5215	5HK-D15	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		DUMONT PART No.	NOTES
	OHMS	WATT		
R201	22K			
R202	620K 5%			
R203	620K 5%			
R204	3900Ω			
R205	2700Ω			

ITEM No.	RATING		DUMONT PART No.	NOTES
	OHMS	WATT		
R206	100K			
R207	6800Ω			
R208	5600Ω			
R209	100Ω			
R210	100K			

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		DUMONT PART No.	CBS PART No.	SYLVANIA PART No.	
M201	1N295		1N60	1N295	Fine Tuning (Pigtail)

TUNER ALIGNMENT INSTRUCTIONS

VHF OSCILLATOR ALIGNMENT

Individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range. Switch to channel to be adjusted and adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Set the Fine Tuning fully clockwise.

VIDEO IF ALIGNMENT

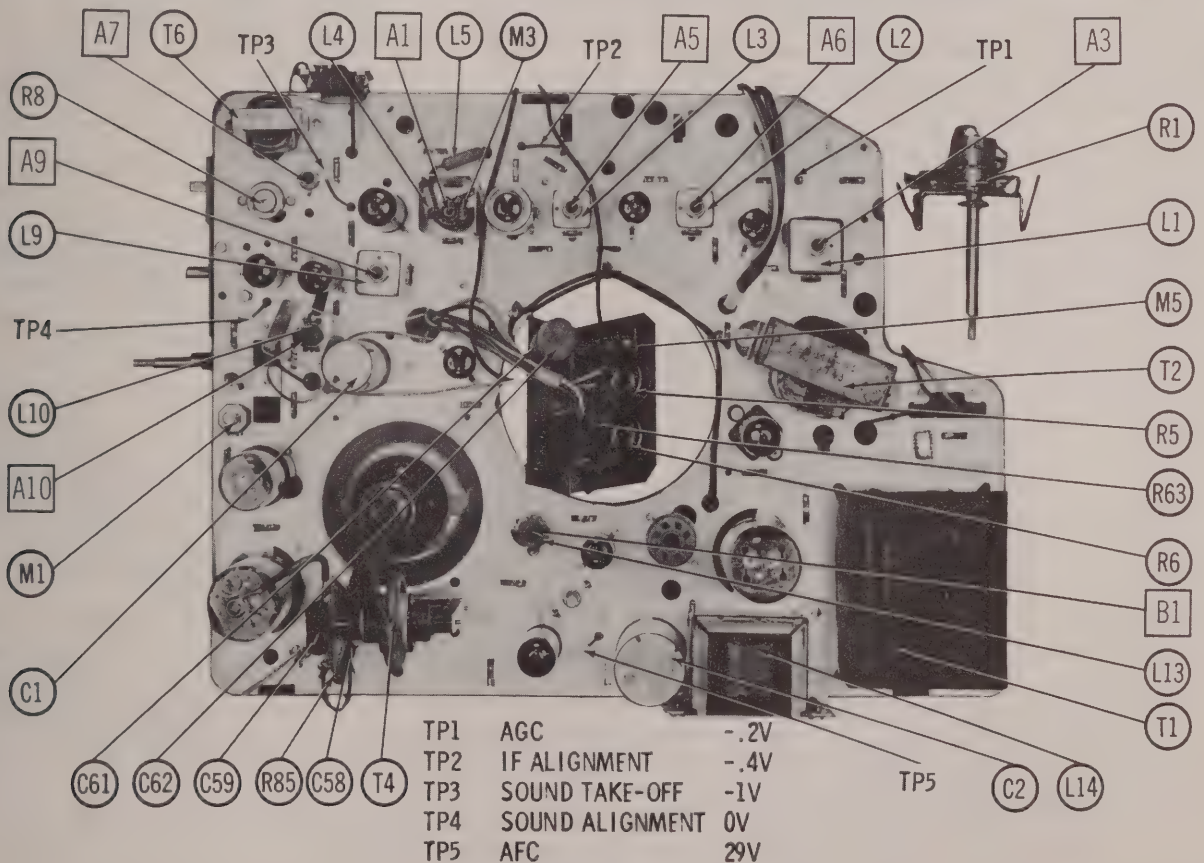
Connect the negative lead of a 4.5 volt bias supply to TP1.
The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. Tube (V202). Low side to chassis.	43.7MC (Unmod)	3	DC probe to TP2. Common to chassis.	A1, A2, & Mixer Plate Coil	Adjust for maximum deflection.
2.	"	"	47.25MC	"	"	A3	Adjust for MINIMUM deflection.
3.	"	"	45.1MC	"	"	A4, A5	Adjust for maximum deflection.
4.	"	"	42.5MC	"	"	A6	"
5.	"	"	43.7MC	"	"		Retouch Mixer Plate Coil for maximum deflection.

SOUND IF ALIGNMENT

Set the Buzz Control (R8) at the center of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.005mfd	High side to pin 7 (grid) of Video Amp. (V4). Low side to chassis.	4.5MC (30% 400~ AM Mod)	Any non-interfering channel	DC probe thru 470K to TP3. Common to chassis.	A7	Adjust for maximum deflection.
7.	"	"	"	"	AC probe or vert. amp. of scope to pin 11 (cathode) of picture tube. Low side to chassis.	A8	Adjust for MINIMUM deflection.
8.	Tune in a strong TV station signal. Adjust A9 and A10 for maximum undistorted sound. Reduce signal strength until a hiss is heard in the sound, and retouch A9 and A10 for maximum undistorted sound. Adjust Buzz Control (R8) for best sound and MINIMUM buzz.						



CHASSIS TOP VIEW

SET 408 FOLDER 1

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st. Video IF Amp.	6CB6	
V2	2nd. Video IF Amp.	6CB6	
V3	3rd. Video IF Amp. - Vert. Mult	6AU8	
V4	Video Output-Sound IF Amp	6AU8	
V5	Audio Detector	6BN6	
V6	Audio Output	6AQ8A	
V7	Sync Sep	6CS8	
V8	Vert. Mult.-Vert. Output	6CZ5	
V9	Horiz. AFC	6AL5	
V10	Horiz. Mult.	6CG7	
V11	Horiz. Output	6DQ6A	
V12	Damper	6AX4GT	
V13	HV Rectifier	1B3GT	
V14	LV Rectifier	5U4GB	

PICTURE TUBE

ITEM No	REPLACEMENT DATA			NOTES
	DUMONT PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V15	21DAP4		21DAP4 ①	21DAP4 ②	① "Silverama" ③
	17BZP4		17BZP4 ①	17BZP4 ②	② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP.	VOLT	DUMONT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	ø40	400	031274B6	AFH3-30-30	D4036			D-183	R3674 *
B	4	400			BH1045			MT-4504	
C	410	400							
C2A	ø120	400	03190547	AFH3-122-30	CD894	FP378		D-341	TVL-2879
B	ø30	25					TMD-75 TD-40-450	MT-4520	

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	DUMONT PART No	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.		
C3	.1	200		P288N-1	DF-104	CUB2P1	GEM-301	2TM-P1		
C4	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47		
C5	4.5									NPO
C6	8					C10V8C				
C7	1000			BPD-001	DD-102	BYA5DI	DC521	5HK-DI		
C8	.056	200								
C9	330			BPD-00033	DD-331	L10T33	UC-5333	5GA-T33		
C10	1000			BPD-001	DD-102	BYA5DI	DC521	5HK-DI		
C11	470				D6-471	5R5T47		MB-347		10%
C12	330				D6-331	L10T33		MB-333		10%
C13	1000			BPD-001	DD-102	BYA5DI	DC521	5HK-DI		
C14	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47		
C15	47				DTZ-47					5%
C16	5800					1DR5D58		MB-256		10%
C17	.22	400		P488N-22		CUB4P22	GEM-4022	4TM-P22		
C18	.056	200								10%
C19	.1	200		P288N-1	DF-104	CUB2P1	GEM-301	2TM-P1		
C20	3.3			NPO-SI 3.3	TCZ-3R3	CTA6V33C	ZT-5533	5TCCB-V33		10%
C21	47			SI 47	D6-470	L75Q47	UC-5647	5GA-Q47		
C22	2.4									5%
C23	7.5									5%
C24	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47		
C25	10				DTZ-10					5%
C26	1000			BPD-001	DD-102	BYA5DI	DC521	5HK-DI		
C27	10000			BPD-01	DD-103	BYA5EI	DC511	5HK-EI		
C28	.01	600		P688N-01	D6-103	CUB6E1	GEM-611	6TM-E1		
C29	2200			BPD-0022	DD-222	BYA10D22	UC-5222	5GA-D22		
C30	.1	200		P288N-1	DF-104	CUB2P1	GEM-301	2TM-P1		
C31	.0033	600		P688N-0033	D6-332	CUB6D33	GEM-6333	6TM-D33		
C32	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47		
C33	.0039	400								10%
C34	.068	600								10%
C35	.0056	400					GEM-16256			10%
C36	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1		
C37	.033	600								10%
C38	.22	200					GEM-2022			10%
C39	.039	400								10%
C40	68			NPO-DI 68	DD-680	L10Q68			5TCC-Q68	10%
C41	75				DD-750	L10Q75		MB-475		10%
C42	.0047	400					GEM-16247			10%
C43	.0033	400					GEM-16233			10%
C44	.0056	400					GEM-16256			10%
C45	.056	200								10%
C46	.0022	400					GEM-16222			10%
C47	.0033	400					GEM-16233			10%
C48	100			N750-DI 100	DTN-100	L10T1U	NT-531		5TCU-T1	N750 10%
C49	330			1468-00033	D6-331	5R5T33		MB-333		10%
C50	680			1464-00068	D6-681	1R5T68		MB-368		10%
C51	390			1468-00039	D6-391	5R5T39		MB-339		10%
C52	1000			BPD-001	DD-102	BYA5DI	DC521	5HK-DI		
C53	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47		
C54	.015	600								
C55	.22	600					GEM-6022			10%
C56	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47		
C57	.022	400		P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22		
C58	330	2000								N150
C59	.033	600		P688N-033	DF-503	CUB6S33	GEM-6133	6TM-S33		
C60	68	2000								5%
C61	2000	900VAC								
C62	2000	900VAC								
C63	1000			BPD-001	DD-102	BYA5DI	DC521	5HK-DI		

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA						INSTALLATION NOTES
	RESISTANCE	WATTS	DUMONT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.		
R1A	500K	1/4	01071084	F1-40	RTY-659	Not Req.	◇GJ-1089	◇◇UK3838	Brightness - Note 1
B	1meg	1/4		R3-53	Not Req.	Not Req.			Volume
C	Switch			KB-1 or KR-1*	Not Req.	Not Req.			
R2A	7500Ω	4(WW)	01036093	WW-752 †	A10-7500	WPE7500			Contrast
B	Shaft			Not Req.	FS-3				
R3	25K	1/4	01071463	B-20		Q13-130		U38A	Fine Tuning
R4A	20K	1/4	01071722	F1-27			◇GJ-967	▭UK3829	Horiz. Hold
B	1.5meg	1/4		R2-54					Vert. Hold
R5A	1meg	1/4	01056049	AB-69	A47-1meg-S	BU-137	TA1EL		Vert. Lin.
B	Shaft			AK-1	FK3-1/4	SK3	Not Req.		
R6A	7.5meg	1/4	01058048	AB-89	A47-7.5meg -S	BU-142	PTA755L		Vert. Size
B	Shaft			AK-1	FK3-1/4	SK3	Not Req.		
R7A	100K	1/4	01071464	AB-40	A47-100K-S	BU-136	PTA15L		Horiz. Stab.
B	Shaft			AE-1	FK3-1/4	SK3	Not Req.		
R8	750Ω	1.5(WW)	01071071		39-800		FL-750		Buzz

Note 1. Part #01071085 used in 17" models.
◇ "Concentrikit" Equivalent : K-4 Kit, Base Elements & Shafts B11-133, P6-224 (Panel)
B13-137, R1-306 (Rear)
T6-1 (Switch)
◇◇ "ETA-LOC" Equivalent : YD55L, OF3636, RU16A, H3125, U8-26.
* Use KR with CRL "red label" and KB with "blue label" controls.
† File shaft flat as required.
■ "Concentrikit" Equivalent: K-7 Kit, Base Elements & Shafts B11-119, P17-112 (Panel)
(Not available as a factory assembled unit.) B11-138, R1-126 (Rear)
▬ "ETA-LOC" Equivalent : FC3631, OF1375, RU155L, H1875.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		DUMONT PART No.	NOTES
	OHMS	WATT		
R9	2.2meg			
R10	5600Ω	4		
R11	27K	2		
R12	1000Ω			
R13	270Ω			
R14	10K			
R15	12K			
R16	56Ω			
R17	470Ω			
R18	4700Ω			
R19	6800Ω			
R20	120K			
R21	120K			
R22	3700Ω	7		
R23	10K	2		
R24	82Ω			
R25	4700Ω			
R26	1meg			
R27	47K	1		
R28	68Ω			
R29	18K			
R30	180K			
R31	2200Ω	1		
R32	33K			
R33	22K			
R34	820K			
R35	4.7meg			
R36	7.5meg 5%			
R37	360K			
R38	150K			
R39	5600Ω			
R40	2.2meg 5%			
R41	270K			
R42	1meg			
R43	1000Ω			
R44	100K			
R45	680Ω			
R46	22K	2		
R47	1.5meg			
R48	470K			

ITEM No.	RATING		DUMONT PART No.	NOTES
	OHMS	WATT		
R49	470Ω			
R50	680Ω			
R51	22K			
R52	1.5meg			
R53	2.2meg			
R54	230K			
R55	100K			
R56	390K			
R57	100K			
R58	22K			
R59	27K			
R60	5600Ω			
R61	2.2meg			
R62	220Ω			
R63	270K			
R64	3300Ω	1		
R65	15K	2		
R66	18K			
R67	15K			
R68	330Ω			
R69	330Ω			
R70	820K			
R71	1meg			
R72	1800Ω			
R73	680Ω			
R74	820K			
R75	82K			
R76	10K	1		
R77	68K			
R78	62K 5%			
R79	5600Ω			
R80	100Ω			
R81	1meg			
R82	100Ω			
R83	8200Ω	2		
R84	1.2meg			
R85	10K	1		
R86	100K			
R87	1000Ω 5%			
R88	270Ω			

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI	SEC. 1	SEC. 2	DUMONT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V	540VCT ② 1.77A	5V ② 3A	20012681					28R47	H-89BC
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ② 3.9A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		DUMONT PART No	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	Vert. Output	20010453	Z1900 ①②	A-3038 MDF-110 ③	V305 ①	A-8143	28S53 ①	A-118X Y-46 ②	
T3A	Yoke-Horiz. (30MH)	80014641							
B	(110°)-Vert. (28.5MH)								
T4	Horiz. Output	20012691		HVO-128 *			FLY-148 *		
T5	Width Coil (14-50MH)	21017691		MWC-3			WC-19		

① Connect as autoformer.
② Use 10 : 1 turns ratio.
③ Use original rear cover, centering device and yoke damping network.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5		5			5	
6		6			6	
2		2			2	
1		1			1	
D		D			D	
C		C			C	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DUMONT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T6	11K	3-4Ω	20010571	Z1903 ①	A-3905 ①	AU-608 ①	A-3849 ①	34S60 ①	S-81X ①	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DUMONT PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	18003794	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DUMONT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	1st. Video IF	20010523					Includes 47.25MC Trap, RF Choke & Caps.
L2	2nd. Video IF	20010531					
L3	3rd. Video IF	20010532					
L4	4th. Video IF	20010551					Includes Cap. & M3
L5	RF Choke	21014454					27 Microhenries
L6	Shunt Peaking Coil	21014359	19-3500	TV-186		6144	540 Microhenries
L7A	4.5MC Trap	21014691		TV-130			
B	1st. Sound IF						
L8	Series Peaking Coil	21014358	19-3138	TV-196		6153	130 Microhenries
L9	2nd. Sound IF	20010562		TV-149 ▲			Includes Caps. & Resistor
L10	Quadrature Coil	21013851		TV-131			
L11	RF Choke	21006550				4611	8.2 Microhenries ①
L12	RF Choke	21006520		SW-631			4.7 Microhenries ①

▲ Remove 470mmf Cap. from secondary circuit.
① IRC Part #CL-1.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DUMONT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L13	108Ω		21014814	19-1576	TV-185 *		H-102	28S-7 ▲*	▲ Drill new mounting hole * Disregard tap.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~	DUMONT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L14	.280A	47Ω	2 Hy.	21014876						

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	DUMONT PART No.	REPLACEMENT DATA
K1	Vert. Integrator		88001481	
K2	Vert. Osc.		88001482	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DUMONT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	N	1/4A 250V S/B	11006060		332.250 (N-1/4A-125V-S/B)	346006	N 1/4	HN 0 to 3/10
M2	1" Length #26 Wire							

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		DUMONT PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N295	28001691	1N90	1N295	Video Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	DUMONT PART No.	NOTES
M4	Tuner	89014353	UHF-VHF 21" Models
	Tuner	89014352	UHF-VHF 17" Models
	Tuner	89014453	UHF
	UHF Kit	99344127	
M5	Switch	05004330	Local-Distance, Slide Type

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

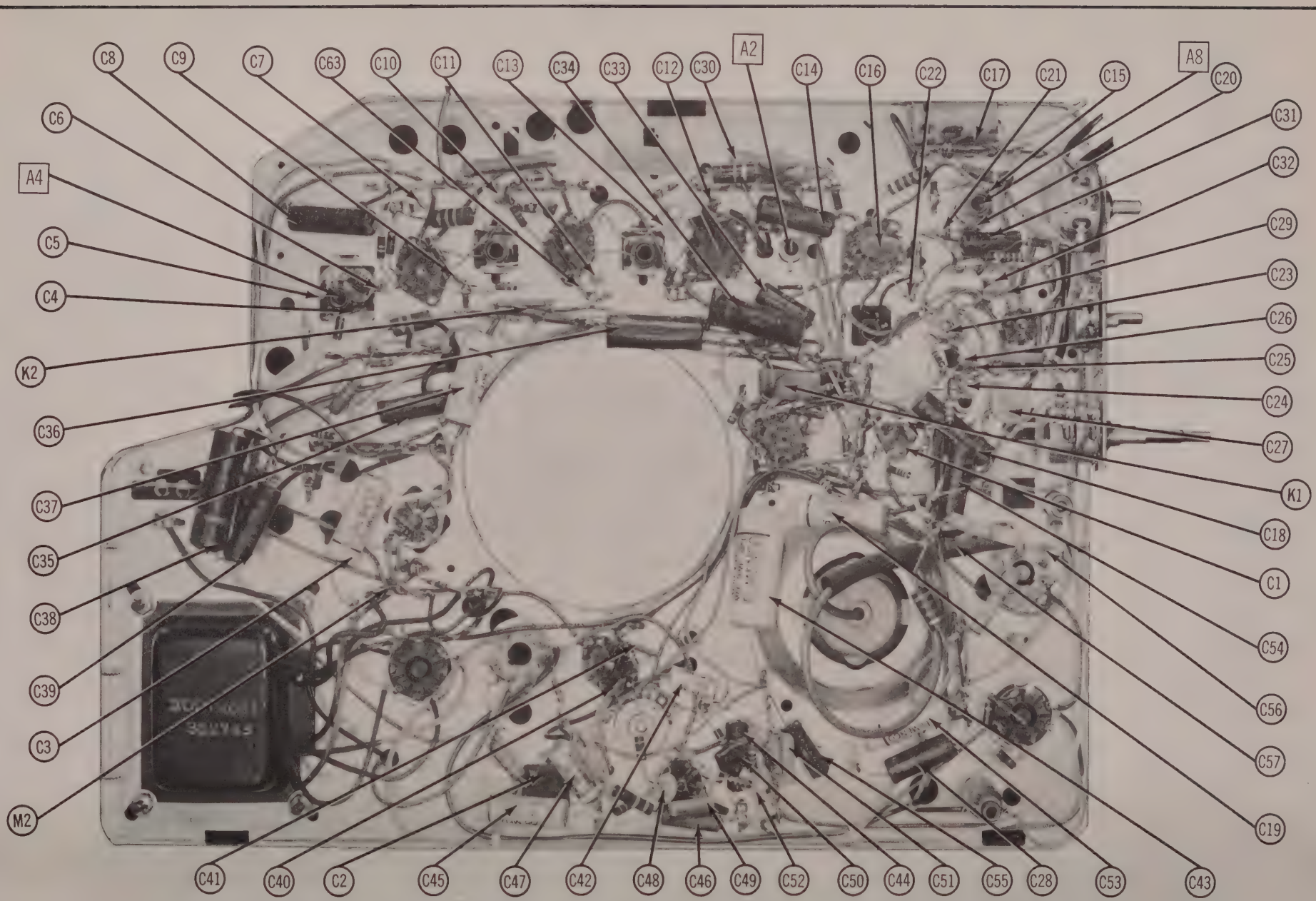
NAME	PART NO.	DESCRIPTION
Safety Glass	45007484	17" Models
Safety Glass	45007485	21" Models
Mask	6401721	17" Models
Mask	6401441	21" Models

WIRING DATA

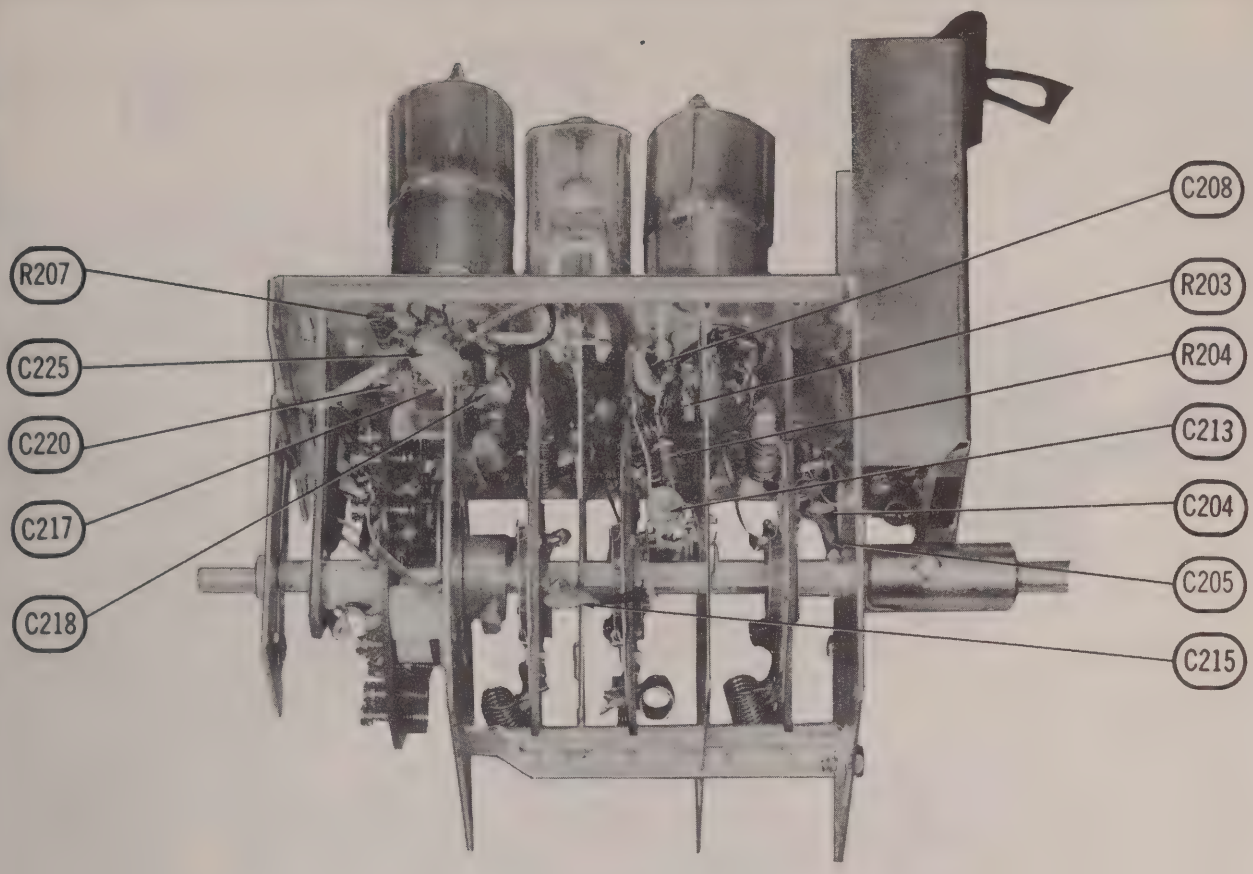
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8736 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8235
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

DUMONT CHASSIS RA-402, RA-403

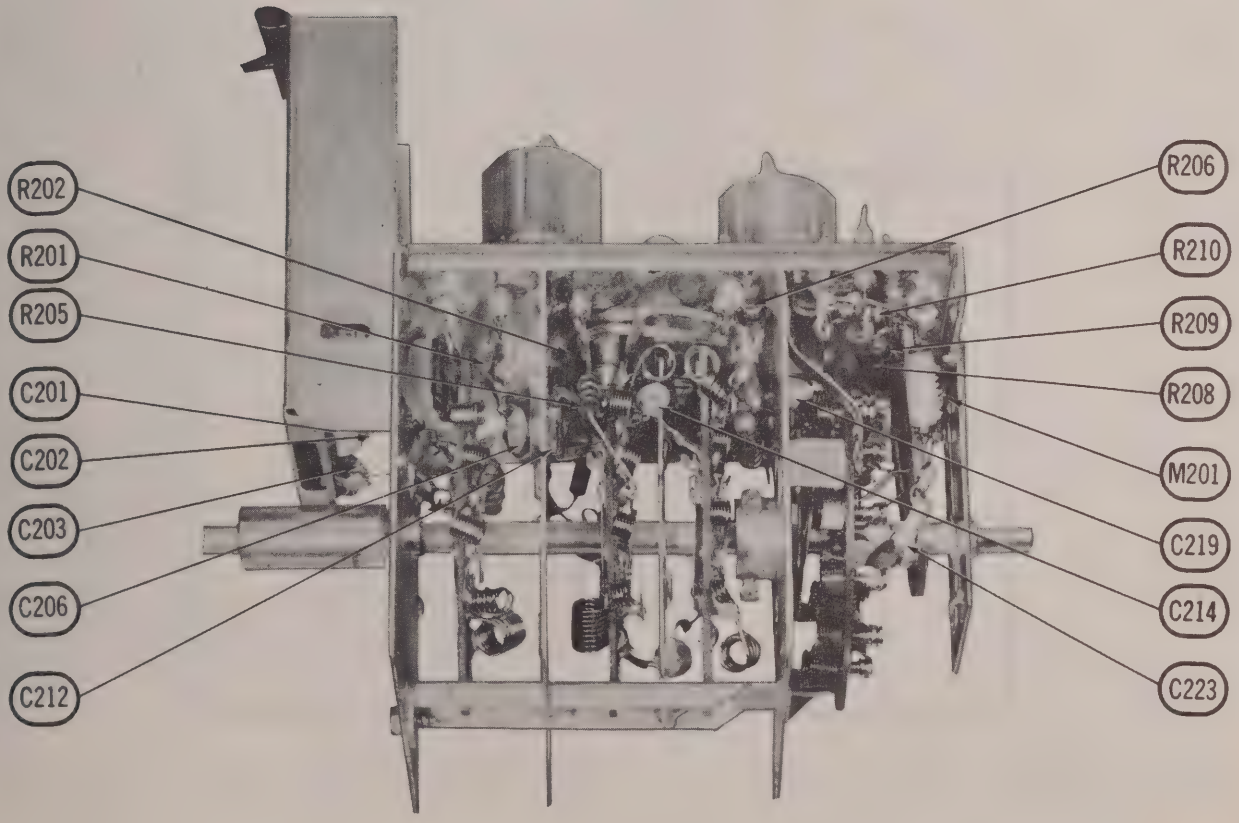
FOLDER 1



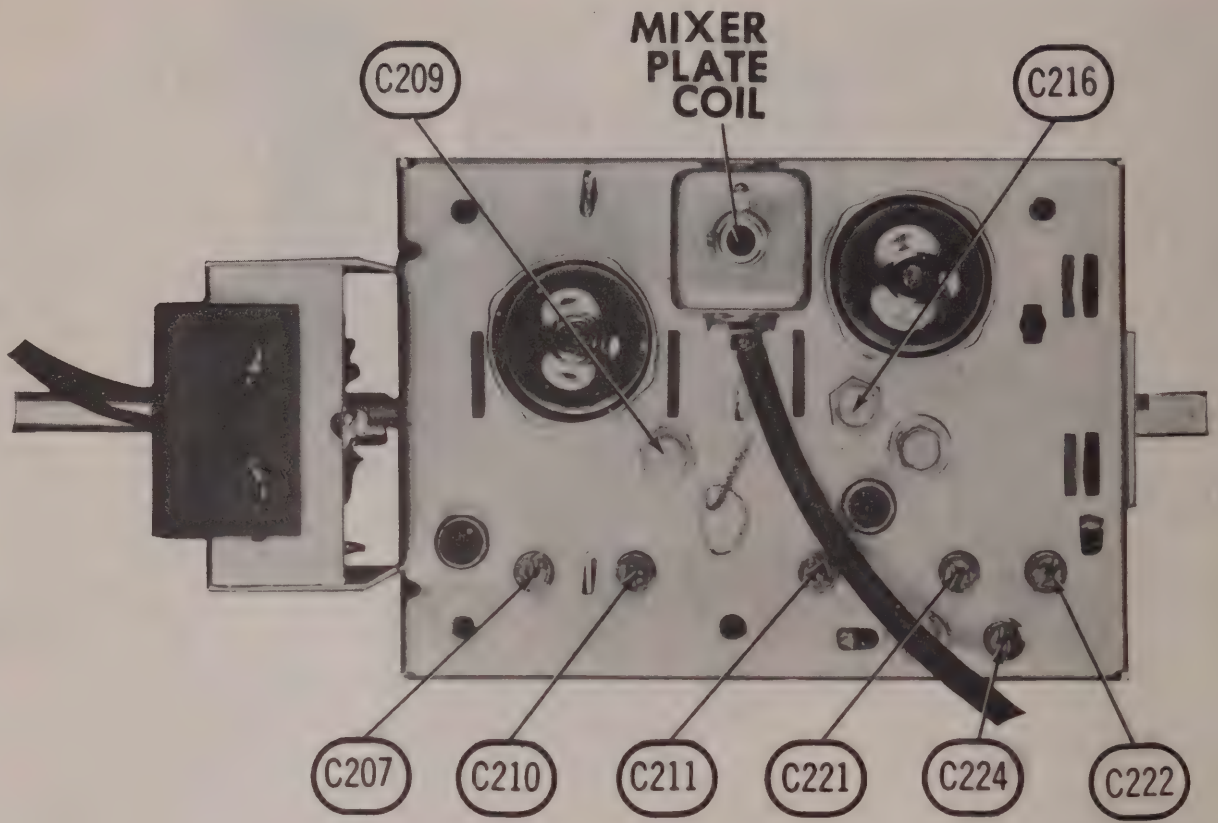
CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



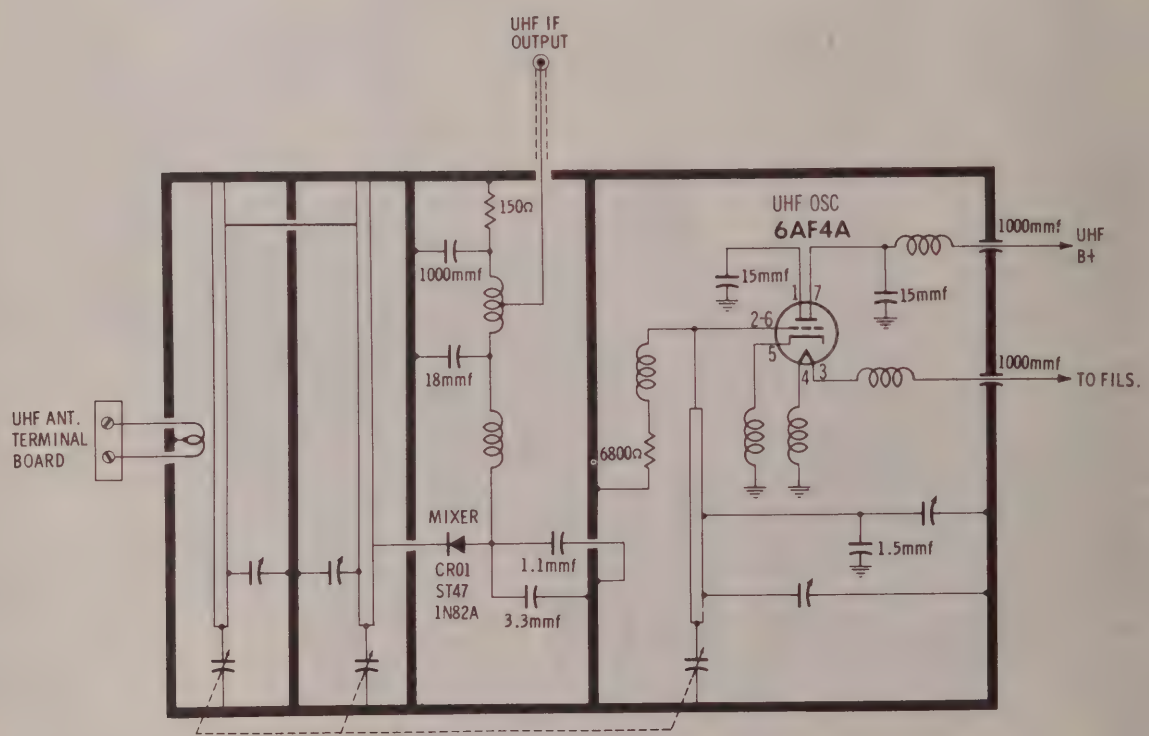
RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE



RF TUNER-TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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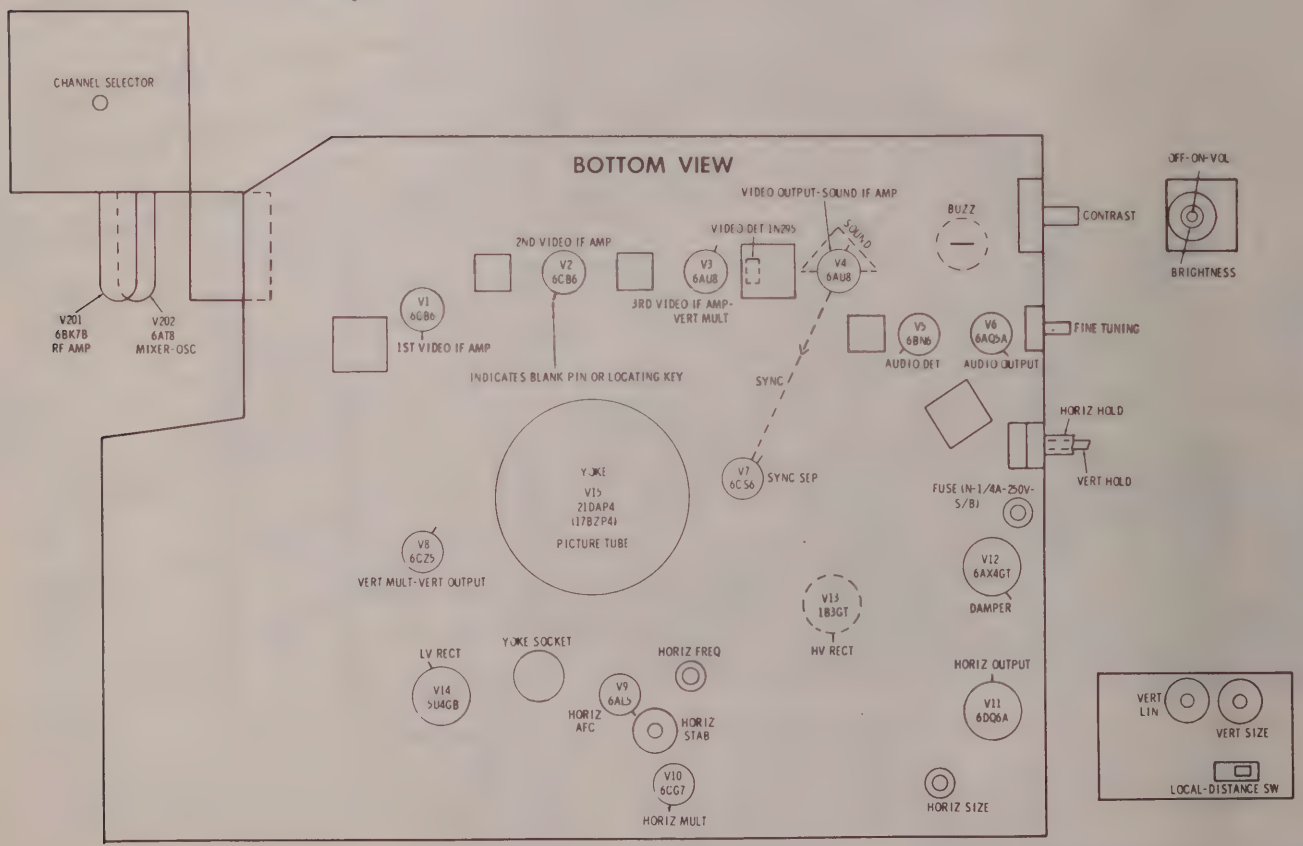
UHF TUNER #89014453

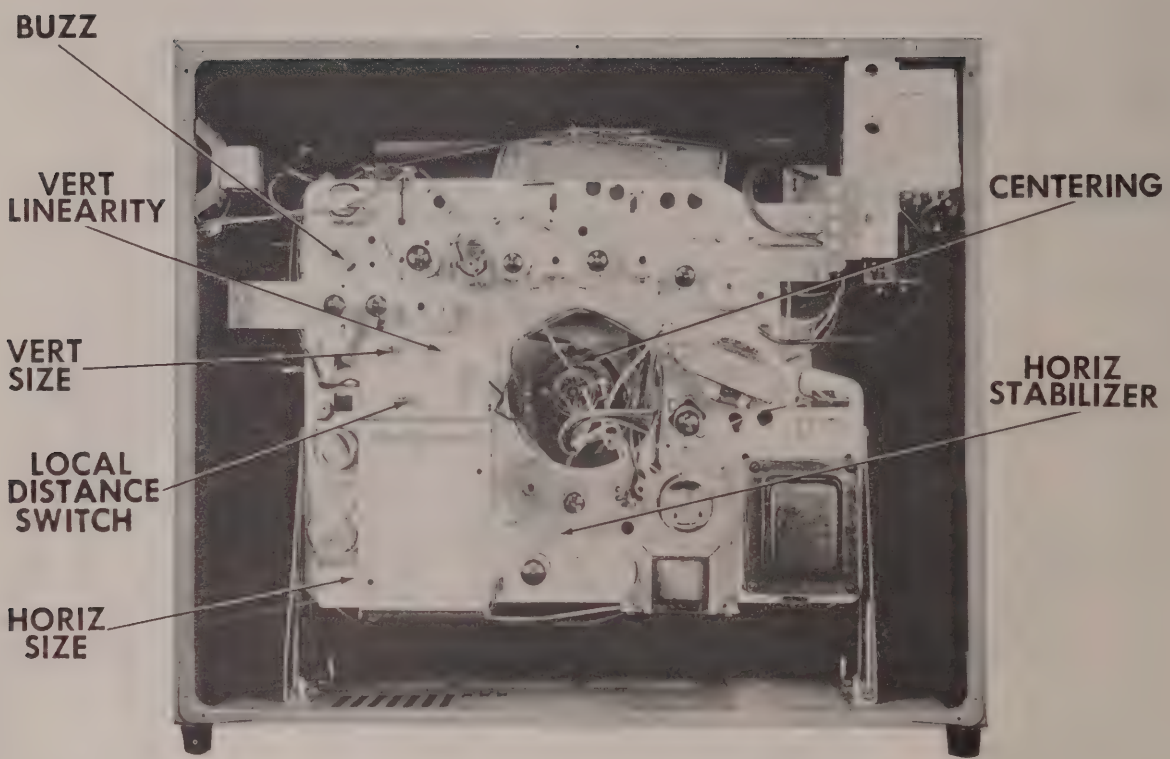
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	650K	56Ω	0Ω	.1Ω	▲ 470Ω	▲470Ω	0Ω		
V2	6CB6	60K	67K	0Ω	.1Ω	† 470Ω	† 470Ω	67K		
V3	6AU8	0Ω	• 1.6meg	• ‡4meg	0Ω	.1Ω	82Ω	.1Ω	† 3300Ω	† 3300Ω
V4	6AU8	0Ω	100K	† 55K	0Ω	.1Ω	68Ω	1meg	† 47K	† 7500Ω
V5	6BN6	• 400Ω	.4Ω	0Ω	.1Ω	† 22K	4.5Ω	‡2meg		
V6	6AQ5A	0Ω	680Ω	0Ω	.1Ω	† 820Ω	† 470Ω	0Ω		
V7	6CS6	360K	0Ω	0Ω	.1Ω	† 60K	† 11K	700K		
V8	6CZ5	† 0Ω	TP	• 2.8meg	0Ω	.1Ω	• 2.8meg	0Ω	NC	† 375Ω
V9	6AL5	1meg	1800Ω	.1Ω	0Ω	1meg	NC	1.8meg		
V10	6CG7	† 10K	2.6meg	1000Ω	0Ω	.1Ω	† 82K	• 80K	1000Ω	0Ω
V11	6DQ6A	NC	.1Ω	NC	† 8300Ω	1meg	TP	0Ω	0Ω	TOP CAP ‡17.3Ω
V12	6AX4GT	NC	NC	INF	NC	† 48Ω	NC	0Ω	.1Ω	
V13	1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡262Ω
V14	5U4GB	NC	¶ 20K	NC	22Ω	NC	21Ω	NC	¶ 20K	
V15	17BZP4	0Ω	15K	† 0Ω	† 0Ω	NC	NC	• 150K	.1Ω	
V201	6BK7B	INF	3meg	0Ω	0Ω	.1Ω	† 1800Ω	300K	INF	0Ω
V202	6AT8	6800Ω	† 10K	0Ω	0Ω	.1Ω	† 1200Ω	† 100K	0Ω	100K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 7 OF V2.
† MEASURED FROM 260V SOURCE.
‡ MEASURED FROM PIN 3 OF V12.
NC NO CONNECTION.
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a clip lead across the Horizontal Frequency Coil (L13).

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Horizontal Hold to the center of its range and adjust the Horizontal Stabilizer (R7) until the picture almost locks in sync horizontally.

Remove the clip lead from across L13 and adjust the Horizontal Frequency (B1) until the picture synchronizes horizontally.

Adjust the Horizontal Size (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

SET 408 FOLDER 2

EMERSON MODELS 1282, X, 1283, X, 1284, X, 1285, 1286, 1287 (Ch. 120380H, 381M, 388H, 389M, 412H, HC, 413M, MC, 414H, 437HC, 438MC)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type knobs from the front and 3 from the side.

2. Remove 6 metal screws from the rear cover, the tuner antenna leads and the rear cover.

3. Remove 4 metal screws from inside the cabinet holding the front control bracket and side control bracket.

4. Remove 4 metal screws holding the tuner bracket.

5. Remove the picture tube socket, HV lead and speaker leads. Loosen the yoke clamp.

6. Remove 5 chassis bolts from the bottom.

7. Remove the chassis and yoke.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

MODEL 1282 (CH.120412H)

EMERSON MODELS 1282, X, 1283, X, 1284, X, 1285, 1286, 1287 (Ch. 120380H, 381M, 388H, 389M, 412H, HC, 413M, MC, 414H, 437HC, 438MC)

TRADE NAME	Emerson	MODELS	CHASSIS
		1282, 1284	120380H
		1283, 1285	120381M
		1286	120388H
		1287	120389M
		1282, 1284	120412H
			120412HC
		1283, 1285	120413M
			120413MC
		1286	120414H
		1282X, 1284X	120437HC
		1283X	120438MC

MANUFACTURER	Emerson Radio & Phonograph Corp., 14th. & Coles Sts., Jersey City 2, N.J.
TYPE SET	Television Receiver
TUBES	Fifteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 160 Watts, 1.6 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. One slug for HIGH band adjustment is located at 7 o'clock, and should be adjusted first. Proceeding in a counterclockwise direction adjust channels 6 and 5, 4 and 3, and 2 for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 push-on type knobs from the front. Remove the screws from the bottom of the front holding the safety glass retainer. Slide glass down, tilt out at the top and remove.

SPECIAL ADJUSTMENTS

A. Focus
No provision is made to vary the focus on this receiver.

B. Picture Stabilizer
Adjust picture to lock in with hold controls. If picture jitters, etc. adjust Picture Stabilizer until stable. Readjust the hold controls and check operation on all channels in the area.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Remove the rear cover and supply power to the receiver. Set the Horizontal Hold at the center of its range. Adjust the Horizontal Balance Control until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Discriminator secondary (A6) located on top of chassis.

FUSES

One fuse is used for low voltage supply protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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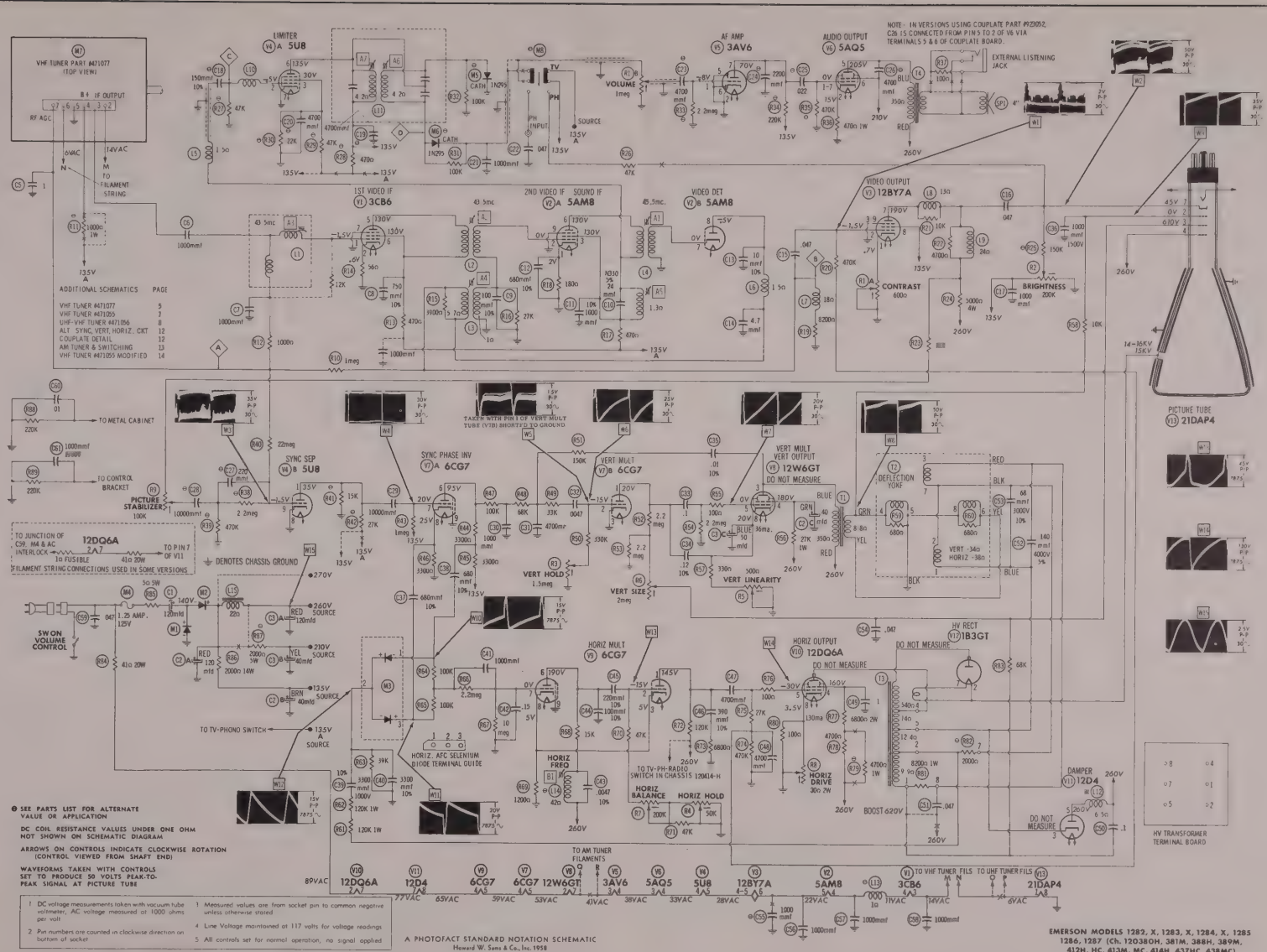
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H520

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

SET 408 FOLDER 2

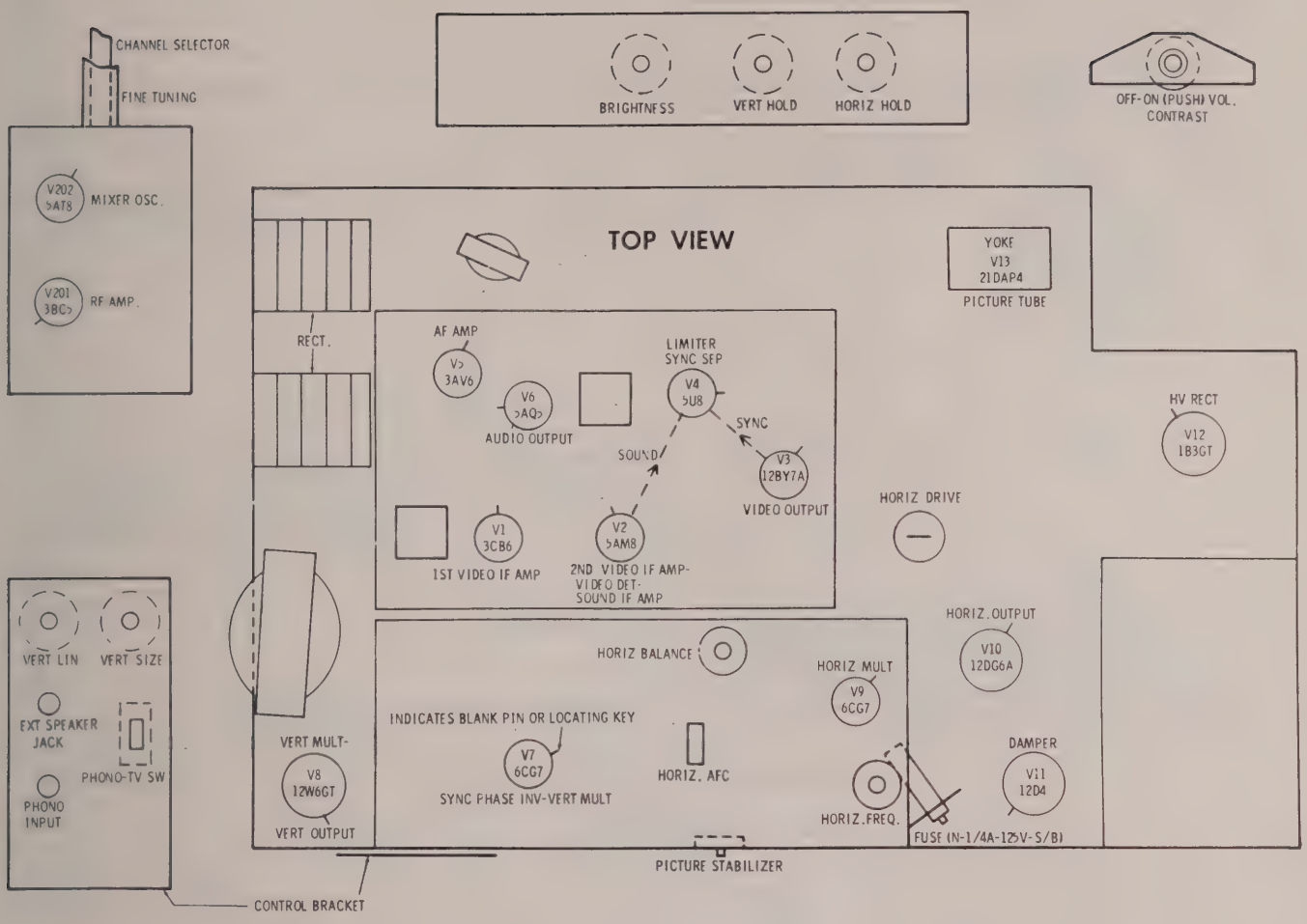

LIMITER V4 A 5U8
1ST VIDEO IF V1 3CB6
2ND VIDEO IF SOUND IF V2 A 5AM8
VIDEO DET V2 B 5AM8
AF AMP V5 3AV6
AUDIO OUTPUT V6 5AQ5
VIDEO OUTPUT V3 12BY7A
SYNC SEP V4 B 5U8
SYNC PHASE INV V7 A 6CG7
VERT MULT V7 B 6CG7
VERT MULT VERT OUTPUT V8 12W6GT
HORIZ MULT V9 6CG7
HORIZ OUTPUT V10 12DQ6A
HV RECT V12 1B3GT
DAMPER V11 12D4
PICTURE TUBE V13 21DAP4
VHF TUNER PART #471077 (TOP VIEW)
ADDITIONAL SCHEMATICS PAGE
VHF TUNER #471077 5
VHF TUNER #471055 7
UHF-VHF TUNER #471056 8
ALT SYNC, VERT, HORIZ. CKT 12
COUPLATE DETAIL 12
AM TUNER & SWITCHING 13
VHF TUNER #471055 MODIFIED 14
NOTE - IN VERSIONS USING COUPLATE PART #923052, C26 IS CONNECTED FROM PIN 5 TO 2 OF V6 VIA TERMINALS 5 & 6 OF COUPLATE BOARD.
EXTERNAL LISTENING JACK
VOLUME 1meg
CONTRAST 600Ω
BRIGHTNESS 200K
VERT HOLD 1.5meg
VERT SIZE 2meg
VERT LINEARITY
HORIZ FREQ
HORIZ HOLD
HORIZ BALANCE
HORIZ DRIVE 20K 2W
PICTURE STABILIZER 100K
DEFLECTION YOKE
VERT -34Ω HORIZ -38Ω
TO METAL CABINET
TO CONTROL BRACKET
TO JUNCTION OF C29, M4 & AC INTERLOCK
TO FUSIBLE FILAMENT STRING CONNECTIONS USED IN SOME VERSIONS
TO PIN 7 OF V11
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
TO TV-PHONO SWITCH
TO TV-PH-RADIO SWITCH IN CHASSIS 120414-H
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE
TO AM TUNER FILAMENTS
TO VHF TUNER FILS
TO UHF TUNER FILS
DO NOT MEASURE
BOOST 620V
HV TRANSFORMER TERMINAL BOARD
TAKEN WITH PIN 1 OF VERT MULT TUBE (V7B) SHORTED TO GROUND
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1 DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
1 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

EMERSON MODELS 1282, X, 1283, X, 1284, X, 1285, 1286, 1287 (Ch. 120380H, 381M, 388H, 389M, 412H, HC, 413M, MC, 414H, 437HC, 438MC)

FOLDER 2

TUBE PLACEMENT CHART



EMERSON MODELS 1282, X, 1283, X, 1284, X, 1285, 1286, 1287 (Ch. 120380H, 381M, 388H, 389M, 412H, HC, 413M, MC, 414H, 437HC, 438MC)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

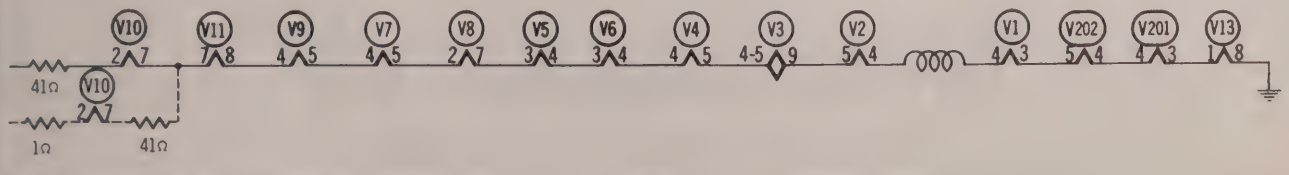
POWER SUPPLY FAILURE
No raster, no sound **Fuse (M4), Rectifiers (M1, M2)**

SWEEP FAILURE
No raster, has sound **Rectifier (M3), V9, V10, V11, V12, V13**
No vertical deflection **V7, V8**
Poor vert. linearity or foldover **V7, V8**
Poor horiz. linearity or foldover **V9, V10, V11**
Narrow picture **V9, V10, V11, M1, M2**
Vert. off freq. **V7, V8**
Horiz. off freq. **V9**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster **V1, V2**
No pic, no sound, has snow **V201, V202**
No pic, has sound, has raster **V2, V3, V13**
Has pic, no sound **V4, Diode (M5, M6), V5, V6**

SYNC FAILURE
No vert. sync **V4, V7**
No horiz. sync **V4, V7, M3**
No vert. or horiz. sync **V4, V7**

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Preset Mixer Plate Trimmer fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	Not used	45.5MC	Any non-interfering channel	USE VTVM DC probe to point Ⓑ Common to chassis. (Across Video Det. load)	A1	Use only enough generator output to provide a usable indication on VTVM. Adjust for maximum deflection.
2.	"	"	"	43.5MC	"	"	A2, A3, Mixer Plate Coil	"
3.	"	"	44.0MC (10MC Swp)	45.75MC	"	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis. (Across Video Det. load)	Mixer Plate Trimmer	Use only enough sweep generator output to provide a usable pattern on scope. Check for response similar to Fig. 1. Adjust Mixer Plate Trimmer to place marker at 40% on curve. The bandwidth will also be affected and should be about 3MC.

SOUND IF ALIGNMENT

Loosely couple the antenna to the antenna terminals of the receiver and tune in a weak TV signal.
Connect the DC probe of the VTVM to point Ⓒ. Common to chassis.
Adjust A4 and A5 for maximum negative reading on the VTVM.
Move the DC probe to point Ⓓ. Detune A6 for maximum negative reading on the VTVM.
Adjust A7 for maximum negative reading on the VTVM.
Readjust A6 toward original position of the slug for MINIMUM voltage reading on the VTVM. Check audio. If distorted repeat entire procedure.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

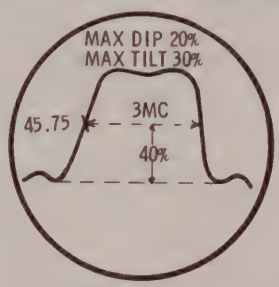
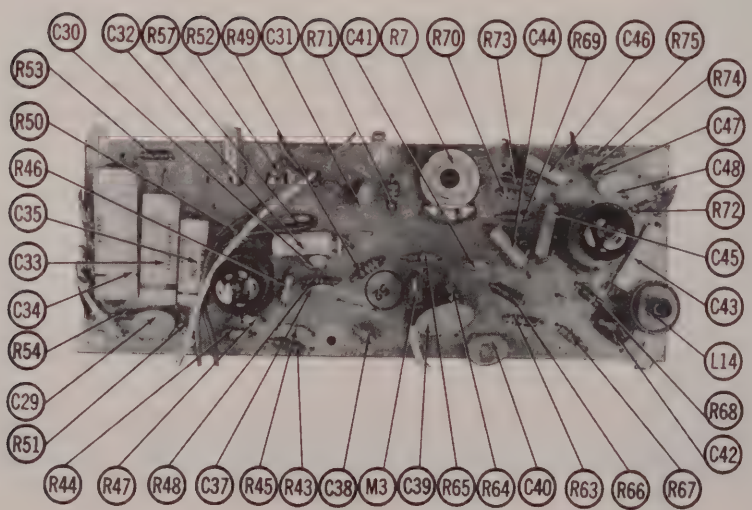
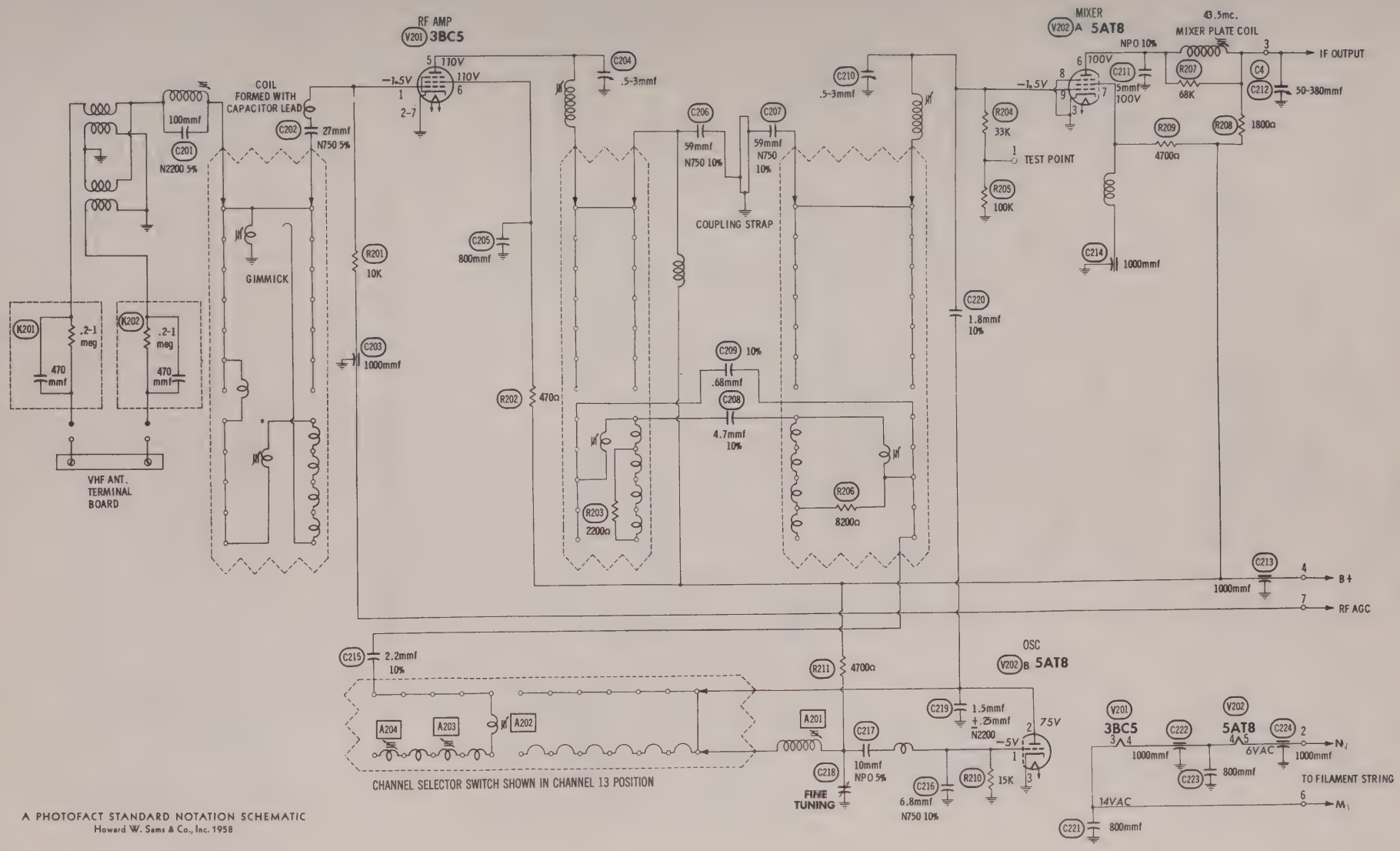


FIG.1



SWEEP PRINTED BOARD



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

VHF TUNER #471077

EMERSON MODELS 1282, X, 1283, X, 1284, X, 1285, 1286, 1287 (Ch. 12038OH, 381M, 388H, 389M, 412H, HC, 413M, MC, 414H, 437HC, 438MC)

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	3BC5	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5AT8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	100								N220 5%
C202	27								N750 5%
C203	1000			EF-001	MFT-1000			503C-D1	
C204	.5-3				829-3		CT565A		
C205	800			BPD-0008	DD-801	L10T8		5GA-T8	
C206	59								N750 10%
C207	59								N750 10%
C208	4.7			NPO-SI 4.7	TCZ-4R7	CTA6V47C	ZT-5547	5TCCB-V47	10%
C209	.68								10%
C210	.5-3				829-3		CT565 A		
C211	5			NPO-DI 5		C10V5C	ZT-555		NPO 10%
C212									
C213	1000			EF-001	MFT-1000			503C-D1	
C214	1000			EF-001	MFT-1000			503C-D1	
C215	2.2				TCZ-2R2				10%
C216	6.8					C10V68U			N750 10%
C217	10				DTZ-10				NPO 5%
C218									
C219	1.5								N2200 ±.25mmf
C220	1.8								10%
C221	800			BPD-0008	DD-801	L10T8		5GA-T8	
C222	1000			EF-001	MFT-1000			503C-D1	
C223	800			BPD-0008	DD-801	L10T8		5GA-T8	
C224	1000			EF-001	MFT-1000			503C-D1	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		EMERSON PART No.	NOTES
	OHMS	WATT		
R201	10K			
R202	470Ω			
R203	2200Ω			
R204	33K			
R205	100K			
R206	8200Ω			

ITEM No.	RATING		EMERSON PART No.	NOTES
	OHMS	WATT		
R207	68K			
R208	1800Ω			
R209	4700Ω			
R210	15K			
R211	4700Ω			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	EMERSON PART No.	REPLACEMENT DATA	
K201	Antenna Coupling	470mmf, .2-1meg	961971	Centralab	RC-471
				Sprague	R-9197
K202	Antenna Coupling	470mmf, .2-1meg	961971	Centralab	RC-471
				Sprague	R-9197

TUNER ALIGNMENT INSTRUCTIONS

VHF OSCILLATOR ALIGNMENT

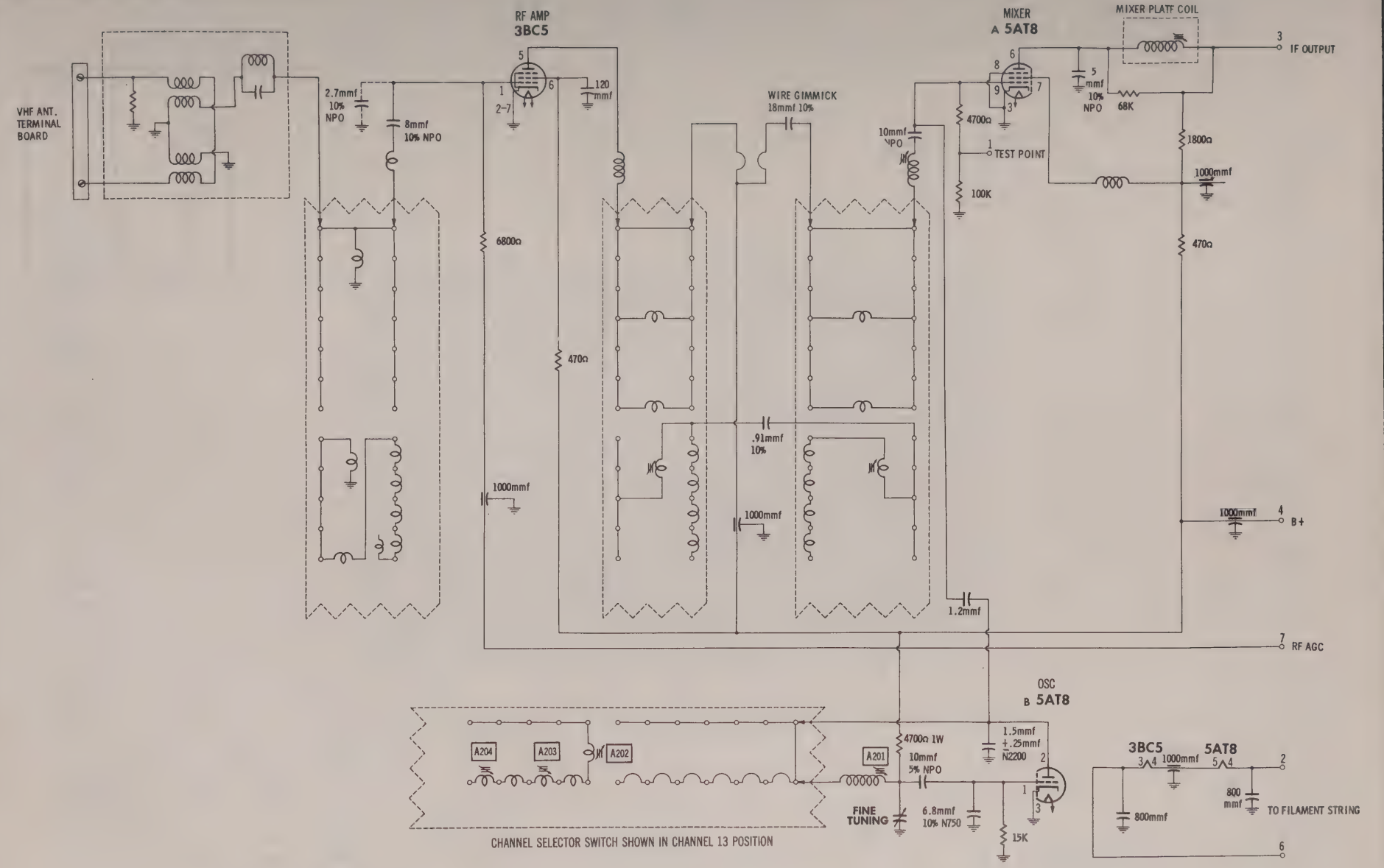
Channel 13 oscillator adjustment slug (A201) is also used for adjusting the other high band (12 thru 7) channels. Channel 6 oscillator adjustment slug (A202) is also adjusted for channel 5. Channel 4 oscillator adjustment (A203) is also adjusted for channel 3. Channel 2 oscillator slug (A204) is used for channel 2 only.
Turn the set on and tune in the highest high band channel and adjust controls for normal operation. Set fine tuning to the center of its range. Adjust A201 for best picture and sound. Switch to next high band channel. If necessary to adjust, do so by bending coil loop appearing at the hole to the left of tuner shaft. Adjust for best picture and sound.
Switch Channel Selector to the highest low band channel (6 thru 2) operating in the area. Adjust proper slug for best picture and sound. If channel 5 or 3 needs adjusting, it will be necessary to switch to the next higher channel, adjust slug SLIGHTLY, then switch back to the channel needing adjustment and check picture. Repeat until proper results are obtained. Repeat procedure until all channels operating in the area have been properly adjusted.

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER ALIGNMENT

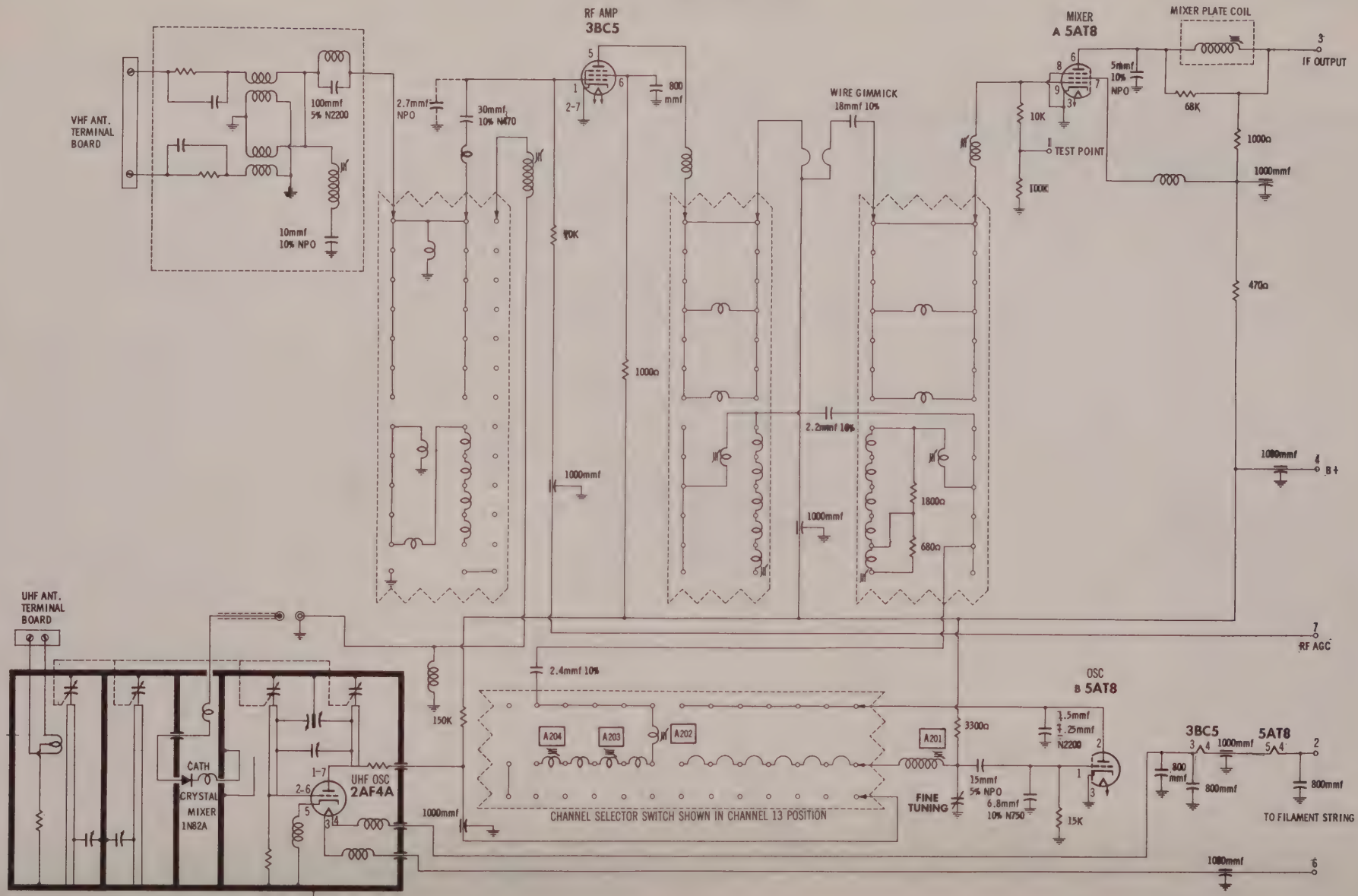
This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

VHF TUNER #471055

EMERSON MODELS 1282, X, 1283, X, 1284, X, 1285, 1286, 1287 (Ch. 120380H, 381M, 388H, 389M, 412H, HC, 413M, MC, 414H, 437HC, 438MC)



UHF-VHF TUNER #471056

VIDEO IF & SOUND PRINTED BOARD

EMERSON MODELS 1282, X, 1283, X, 1284, X, 1285, 1286, 1287 (Ch. 120380H, 381M, 388H, 389M, 412H, HC, 413M, MC, 414H, 437HC, 438MC)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st. Video IF Amp. 2nd. Video IF Amp.-- Video Det.-Sound IF Amp.	3CB6	
V2		5AM8	
V3	Video Output	12BY7A	
V4	Limiter-Sync Sep.	6U8	
V5	A.F. Amplifier	3AV6	
V6	Audio Output	5AQ8	
V7	Sync Phase Inv.-Vert. Mult.	6CG7	
V8	Vert. Output-Vert. Mult.	12W8 GT	
V9	Horiz. Mult.	6CG7	
V10	Horiz. Output	12DQ6A	
V11	Damper	12D4	
V12	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA: EMERSON PART No	GENERAL ELECTRIC PART No.	RCA PART No	SYLVANIA PART No	NOTES
V13	21DAP4			21DAP4 ①	① "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	EMERSON PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No	PYRAMID PART No	SANGAMO PART No.	SPRAGUE PART No.
C1	120	150	925431	PR3-120	BBRD0285	WD251	CDBT-1015	T-080	R2G8 *
C2A	120	300	926429	PR4-300	BBRQ0385	WQ406		Q-011 MT-4520	TVA-4584
B	40	300							
C	40	300						Q-011 MT-0550	R2S01 *
C3A	120	300	925430	PR4-300	BBRQ0385	WT400			
B	40	300							
C	50	50							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No	SPRAGUE PART No.	NOTES
C4	50-380		900183						
C5	.1	200	923315	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	5HK-DI
C6	1000		928919	BPD-001	DD-102	BYA5D1	DC521	5HK-DI	
C7	1000		928919	BPD-001	DD-102	BYA5D1	DC521	5HK-DI	
C8	750		928964			1R5T75		MS-375	10%
C9	100		928897		DD-101	LJ0T1		MS-31	10% N330 5%
C10	24		928960						10%
C11	1000		928891			1R5D1	MCB255	MS-2I	10%
C12	680		928909		D6-681	1R5T68		MS-368	10%
C13	10		928218	NPO-S1 10	D6-100	CTA5Q1C	ZT-541	5TCC-Q1	
C14	4.7		928212	NPO-S1 4.7	TCZ-4R7	CTA6V47C	ZT-5547	5TCCB-V47	
C15	.047	200	924354	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C16	.047	400	924554	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C17	1000		928893	BPD-001	DD-102	BYA5D1	DC521	5HK-DI	
C18	150		928903		D6-151	LJ0T15		MS-315	10% ①
C19	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	②
C20	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	②
C21	1000		928919	BPD-001	DD-102	BYA5D1	DC521	5HK-DI	
C22	.047	400	923554	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C23	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	②
C24	2200		928921	BPD-0022	DD-222	BYA10D22	UC-5223	5GA-D22	②
C25	.022	400	923524	P488N-022	DF-203	CUB4S22	GEM-4122	4TM-S22	②
C26	4700		928954	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	②
C27	220		911184	1488-00022	DD-221	5W5T22	UC-5322	1FM-322	③
C28	10000		928924	BPD-01	DD-103	BYA5S1	DC511	5HK-S1	
C29	10000		923514	BPD-01	DD-103	BYA5S1	DC521	5HK-S1	
C30	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-DI	
C31	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C32	.0047	400	924453	P488N-0047	D6-473	CUB4D22	GEM-6247	6TM-D47	
C33	.1	400	924515	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	10%
C34	.12	400					GEM-1611		10%
C35	.01	500	924614				DC3021	20HKD-D1	
C36	1000	1500	928927	DAC-2	DDI6-102	HVE16S1		MS-368	10%
C37	680		928909		D6-681	1R5T68		MS-368	10%
C38	680		928909		D6-681	1R5T68			10%
C39	3300	1000							10%
C40	3300					1R5D33		MS-333	
C41	1000		928191	BPD-001	DD-102	BYA5D1	DC521	5HK-DI	
C42	.015	200		P288N-015	DDI6-153	CUB6S15	GEM-4115	4TM-S15	
C43	.0047	600					GEM-16247		10%
C44	100			1489-0001	DD-101	32R5T1	MCB235	MS-31	10%
C45	220			1489-00022	D6-221	22R5T22		MS-322	10%
C46	390			1489-00039	D6-391	22R5T39		MS-339	10%
C47	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5HK-D47	
C48	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5HK-D47	
C49	.1	400	924515	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C50	.1	400	924515	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C51	.047	600	924454	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C52	140	4000	928971						5%
C53	56	3000	928765						10%
C54	.047	600	922308	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C55	1000		928919	BPD-001	DD-102	BYA5D1	DC521	5HK-DI	
C56	1000		928919	BPD-001	DD-102	BYA5D1	DC521	5HK-DI	
C57	1000		928919	BPD-001	DD-102	BYA5D1	DC521	5HK-DI	
C58	1000		928919	BPD-001	DD-102	BYA5D1	DC521	5HK-DI	
C59	.047	600	922208	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C60	.01	400	922201	P488N-01	D6-103	CUBAS1	GEM-411	4TM-S1	
C61	1000	1500	928927	DAC-27	DDI6-102	HVE16D1	DC3021	20HKB-D1	

Note 1. In Ch. 120412HC, 413MC, 437HC, 438MC this is part of component combination (Part #923051).
Note 2. In Ch. 120412HC, 413MC, 437HC, 438MC this is part of component combination (Part #923052).
Note 3. In Ch. 120412HC, 413MC, 437HC, 438MC this is part of component combination (Part #923053).

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: EMERSON PART No	CENTRALAB PART No	CLAROSTAT PART No	IRC PART No.	MALLORY PART No	INSTALLATION NOTES
R1A	500Ω	½	390535		RTV-653		UE196	Contrast
B	1meg	½			Not Req.		Not Req.	Volume
C	Switch				Not Req.		Not Req.	
R2A	200K	½	390452	B-46	A47-200K-S	Q11-129	U43	Brightness
B	Shaft			Not Req.	FB-3	Not Req.	Not Req.	
R3A	1.5meg	½	390496	B-742	A47-1.5meg-S	Q11-138	U155	Vert. Hold
B	Shaft			Not Req.	FB-3	Not Req.	Not Req.	
R4A	50K	½	390454	B-31	A47-50K-S	Q11-133	U95	Horiz. Hold
B	Shaft			Not Req.	FB-3	Not Req.	Not Req.	
R5A	500Ω	½	390341	AB-4	A47-500-S	Q11-103	PTA52L	Vert. Lin.
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R6A	2meg	½	390901	AB-75	A47-2meg-S	Q11-139	PTA38L	Vert. Size
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R7A	200K	½	390475					Horiz. Balance
B	Shaft							
R8	300	2(WW)	390544					Horiz. Drive
R9A	100K	½	390455	AB-40	A47-100K-S	Q11-128	PTA15L	Pix Stab.
B	Shaft			AK-19	RN-3	TQ	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	WATT	EMERSON PART No.	NOTES
R10	1meg		341212	
R11	1000Ω	1		Note 1
R12	1000Ω		350492	
R13	470Ω		350413	
R14	56Ω		340192	
R15	3900Ω		340833	
R16	27K		340832	
R17	470Ω		350413	
R18	1800		340312	
R19	8200Ω		340712	
R20	470K		351132	
R21	10K		340733	
R22	4700Ω		340652	
R23	15K		340772	
R24	5000Ω	4	397112	
R25	150K		341012	Note 2
R26	47K		340892	
R27	47K		340892	Note 3
R28	470Ω		350412	Note 3
R29	47K		340892	Note 3
R30	22K		340812	Note 3
R31	100K		340972	
R32	100K		340972	
R33	2.2meg		351292	Note 4
R34	220K		351052	Note 4
R35	470K		351132	Note 4
R36	470Ω	1	370412	
R37	100Ω		350252	
R38	2.2meg		351292	Note 2
R39	470K		351132	Note 2
R40	22meg		341532	
R41	15K		340772	Note 3
R42	27K		340892	Note 3
R43	1meg		351212	
R44	3300Ω		340612	
R45	1200Ω		340612	
R46	3300Ω		340612	
R47	100K		340972	
R48	68K		340932	
R49	33K			
R50	330K		341092	
R51	150K			
R52	2.2meg		351292	
R53	2.2meg		351292	
R54	2.2meg		351292	
R55	100Ω		350252	
R56	27K	1	340832	
R57	330Ω			
R58	10K		340732	
R59	680Ω		350452	
R60	680Ω		350452	
R61	120K	1		
R62	120K	1		
R63	39K			
R64	100K		340972	
R65	100K		340972	
R66	2.2meg		351292	
R67	10meg			
R68	15K		340772	
R69	1200Ω			
R70	47K		340892	
R71	47K		340892	
R72	120K			
R73	6800Ω			
R74	470K		351132	
R75	27K		370832	
R76	100Ω		350252	
R77	6800Ω	2		
R78	4700Ω		340652	
R79	4700Ω	1		
R80	100Ω		350252	
R81	8200Ω	1		
R82	2000Ω			Note 5
R83	68K		340932	
R84	4Ω	20	394202	
R85	5Ω	5	394158	
R86	2000Ω	14	394203	
R87	2000Ω	5		Note 6
R88	220K		351057	
R89	220K		351057	

Note 1. Not used in some versions.
Note 2. In Ch. 120412HC, 413MC, 437HC, 438MC this is part of component combination(Part #923053).
Note 3. In Ch. 120412HC, 413MC, 437HC, 438MC this is part of component combination (Part #923051).
Note 4. In Ch. 120412HC, 413MC, 437HC, 438MC this is part of component combination(Part #923052).
Note 5. Some versions use 10K in this application (Part #340732).
Note 6. In versions where this resistor is connected to C3A and L15 a 470Ω 2W is used (Part #790412).

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	Hallodorson PART No.	Merit PART No	Ram PART No	Stancor PART No	Thordorson PART No.	Triad PART No	NOTES
T1	Vert. Output	731850	21900 ①	A-3038	V307	A-8144	26S53	A-108X	
T2 A	Yoke-Horiz. (21MEB)	708330							
B	(110°)-Vert. (23MEB)								
M9	Rear Cover & Centering Device	708340							
T3	Horiz. Output	731851							

① Use 8 to 1 turns ratio.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: EMERSON PART No.	Hallodorson PART No.	Merit PART No	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T4	5200Ω	3-4Ω	731462	Z1107 ①	A-3026 ①	AU-601 ①	A-3877 ①	24S51 ①	S-8X ①	① Drill new mtg. hole.

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: EMERSON PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	180168	4A07	

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA: EMERSON PART No	Meissner PART No	Merit PART No	Miller PART No	Ram PART No	NOTES
L1	1st. Video IF	720304					
L2	2nd. Video IF	720306					
L3	1st. Sound IF	720305					
L4A	3rd. Video IF	720296					
B	2nd. Sound IF						
L5	RF Choke	708312	19-1005	BC-566	4612		11 Microhenries
L6	RF Choke	708313	19-1006	BC-566	4613		11 Microhenries
L7	Shunt Peaking Coil	708274	19-3680	TV-306	6145		560 Microhenries
L8	Series Peaking Coil	708273	19-3300	TV-190	6132	VP-7	330 Microhenries
L9	Shunt Peaking Coil	708274	19-3560	TV-306	6194		560 Microhenries
L10	RF Choke	708271	19-1003	BC-564	4608		4.6 Microhenries
L11	Discriminator	708276					
L12	RF Choke	708021	19-1005	BC-566	4612		10 Microhenries ①
L13	F.U. Choke	705032	19-1001	BC-562	4604		1.5 Microhenries ②

② IRC Part #CLA.
① IRC Part #CL-1.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI.	SEC.	REPLACEMENT DATA: EMERSON PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordorson PART No.	NOTES
L14	42Ω		716103						

FILTER CHOKE

ITEM No	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: EMERSON PART No.	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordorson PART No	Triad PART No
L15	.210A ②250 VDC	22Ω	.550 Hy.	737038						C-27X

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: EMERSON PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.270A	817047 ①	1090A ①	1N1007 ②	RS300SL ①	350 ① M500 ③	① Selenium Type. ② Germanium Type. ③ Silicon Type. ④ Two Required.
M2	.270A	817047 ①	1090A ① 1215 ① ④	1N1007 ②	RS300SL ①	350 ① M500 ③ 1T1 ① ④	
M3							

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: EMERSON PART No: FUSE	HOLDER	LITTELFUSE PART No: FUSE	HOLDER	BUSS PART No: FUSE	HOLDER
M4	N	1 1/4A 125V 8/B	808013		3331.25 (N-1 1/4A-125V-8/B)	346011	N 1 1/4	HN 3/4 to 1 1/4

CRYSTAL DIODES

ITEM No.	ORIG TYPE	REPLACEMENT DATA: EMERSON PART No	CBS PART No.	SYLVANIA PART No.	NOTES
M5	1N295	817018 ①	1N60	1N295	Ratio Det. (Pigtail)
M6	1N295	817018 ①	1N60	1N295	① Alternate Part #817065

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M7	Tuner	471077	VHF Ch. 120412H, HC, 414H, 437HC
	Tuner	471055	VHF Ch. 120380H, 388H
	Tuner	471055 (Modified)	VHF Ch. 120380H, 388H
	Tuner	471056	UHF-VHF Ch. 120381M, 389M, 413M, MC, 438MC Includes UHF-VHF Tuner #962149 and UHF Tuner #961137
M8	Switch	510085	DPDT (Slide Type)
M9	Centering Device	708340	Includes Yoke Rear Cover

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

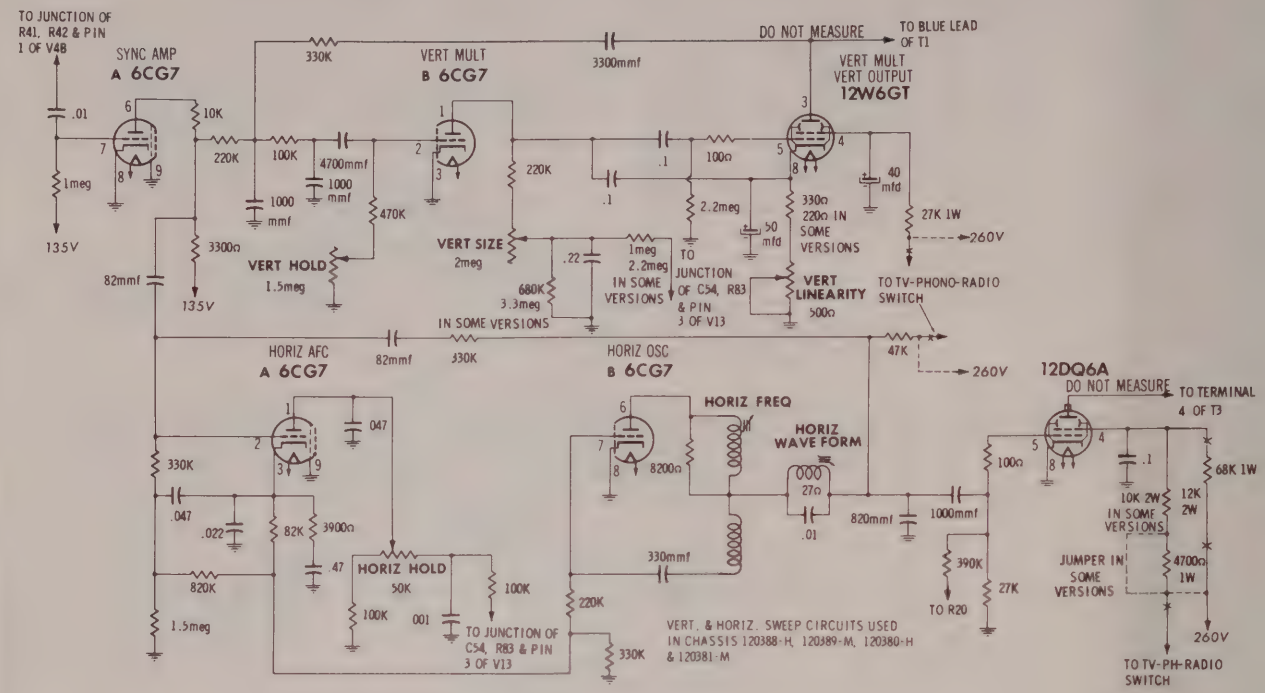
NAME	PART NO.	DESCRIPTION
Safety Glass	520261	
Mask	460933A	
Knob	460928	VHF Channel Selector, Models 1283, 1285, 1287
Knob	460951	VHF Channel Selector, Models 1282, 1284, 1286
Knob	460940	UHF
Knob	460918	Fine Tuning
Knob	460919	Contrast
Knob	460770P	Vert. Hold, Horiz. Hold, Brightness
Knob	460922	On-Off-Volume
Knob	460959	Radio, Models 1286, 1287
Knob	460960	Radio-Phono-TV, Models 1285, 1287
Handle	413048	Brass or Chrome

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8736 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8494 (Flat) or 8484 (Round) - 4 Conductor 8495 (Round) - 5 Conductor 8498 (Round) - 8 Conductor

EMERSON MODELS 1282, X, 1283, X, 1284, X, 1285, 1286, 1287 (Ch. 120380H, 381M, 388H, 389M, 412H, HC, 413M, MC, 414H, 437HC, 438MC)

FOLDER 2



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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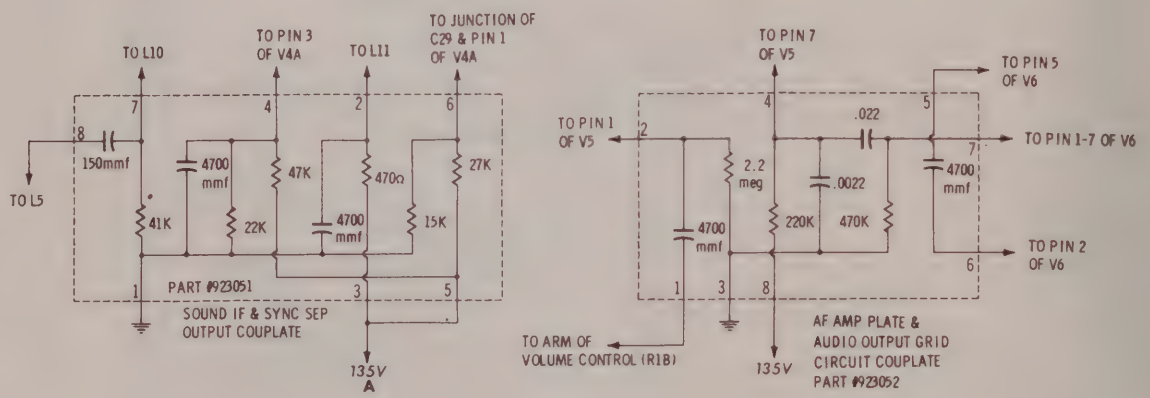
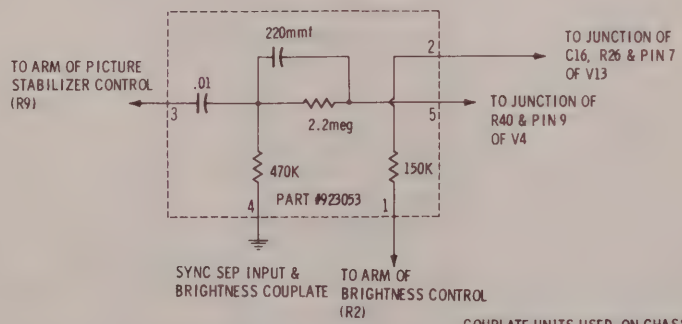
ALTERNATE SYNC, VERT & HORIZ CIRCUIT


TO L10
TO PIN 3 OF V4A
TO L11
TO JUNCTION OF C29 & PIN 1 OF V4A
TO L5
PART #923051
SOUND IF & SYNC SEP OUTPUT COUPLATE
135V A
TO PIN 7 OF V5
TO PIN 5 OF V6
TO PIN 1 OF V5
TO PIN 1-7 OF V6
TO PIN 2 OF V6
TO ARM OF VOLUME CONTROL (R1B)
AF AMP PLATE & AUDIO OUTPUT GRID CIRCUIT COUPLATE PART #923052
135V


TO ARM OF PICTURE STABILIZER CONTROL (R9)
TO JUNCTION OF C16, R26 & PIN 7 OF V13
TO JUNCTION OF R40 & PIN 9 OF V4
PART #923053
SYNC SEP INPUT & BRIGHTNESS COUPLATE
TO ARM OF BRIGHTNESS CONTROL (R2)

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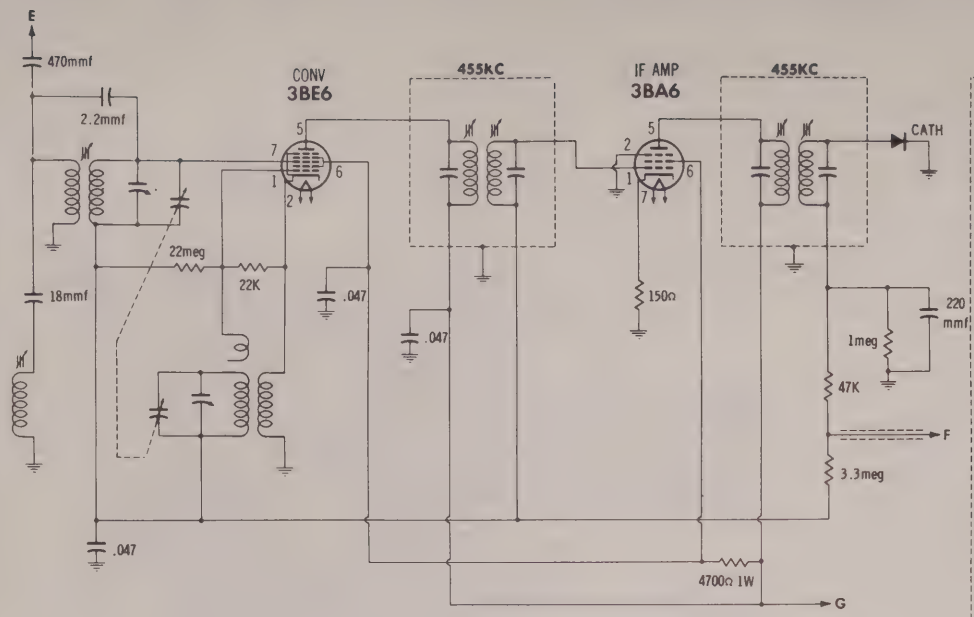
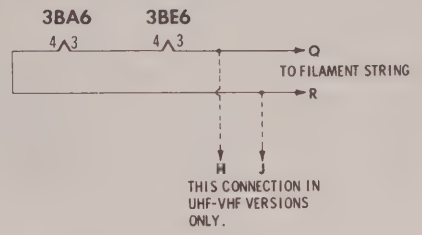
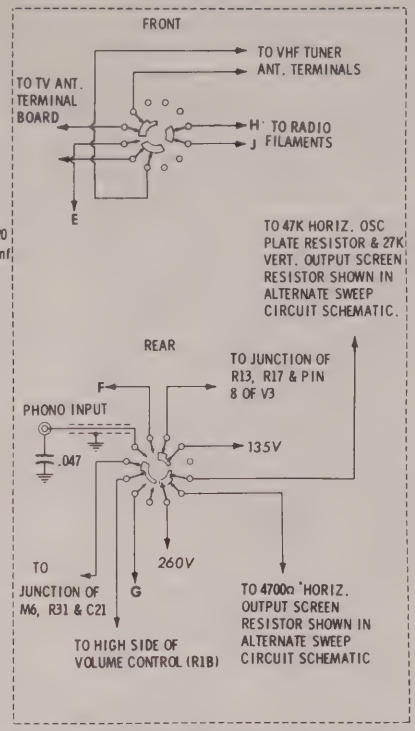
Howard W. Sams & Co., Inc. 1958

COUPLATE UNITS USED ON CHASSIS ENDING WITH SUFFIX LETTER "C".

COUPLATE DETAIL



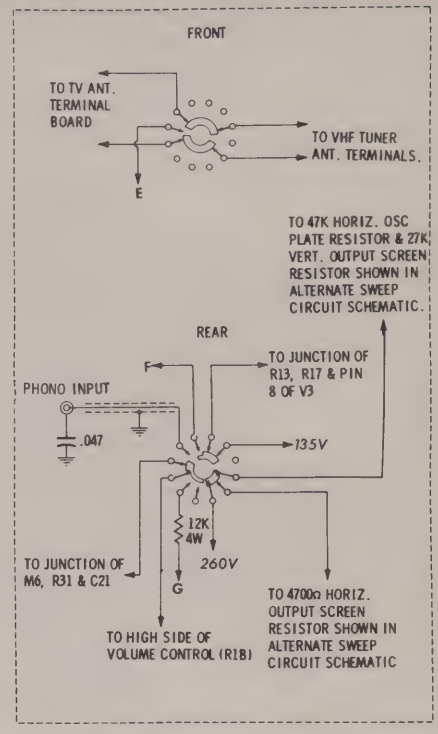




SWITCH & CONNECTIONS USED IN COMBINATION MODELS WITH UHF PROVISION

SELECTOR SWITCH VIEWED FROM KNOB END IN TV POSITION. (MAXIMUM COUNTERCLOCKWISE) SWITCH SEQUENCE:

1. TV
2. PHONO
3. RADIO



SWITCH & CONNECTIONS USED IN COMBINATION MODELS WITHOUT UHF PROVISION.

SELECTOR SWITCH VIEWED FROM KNOB END IN TV POSITION. (MAXIMUM COUNTERCLOCKWISE) SWITCH SEQUENCE:

1. TV
2. PHONO
3. RADIO

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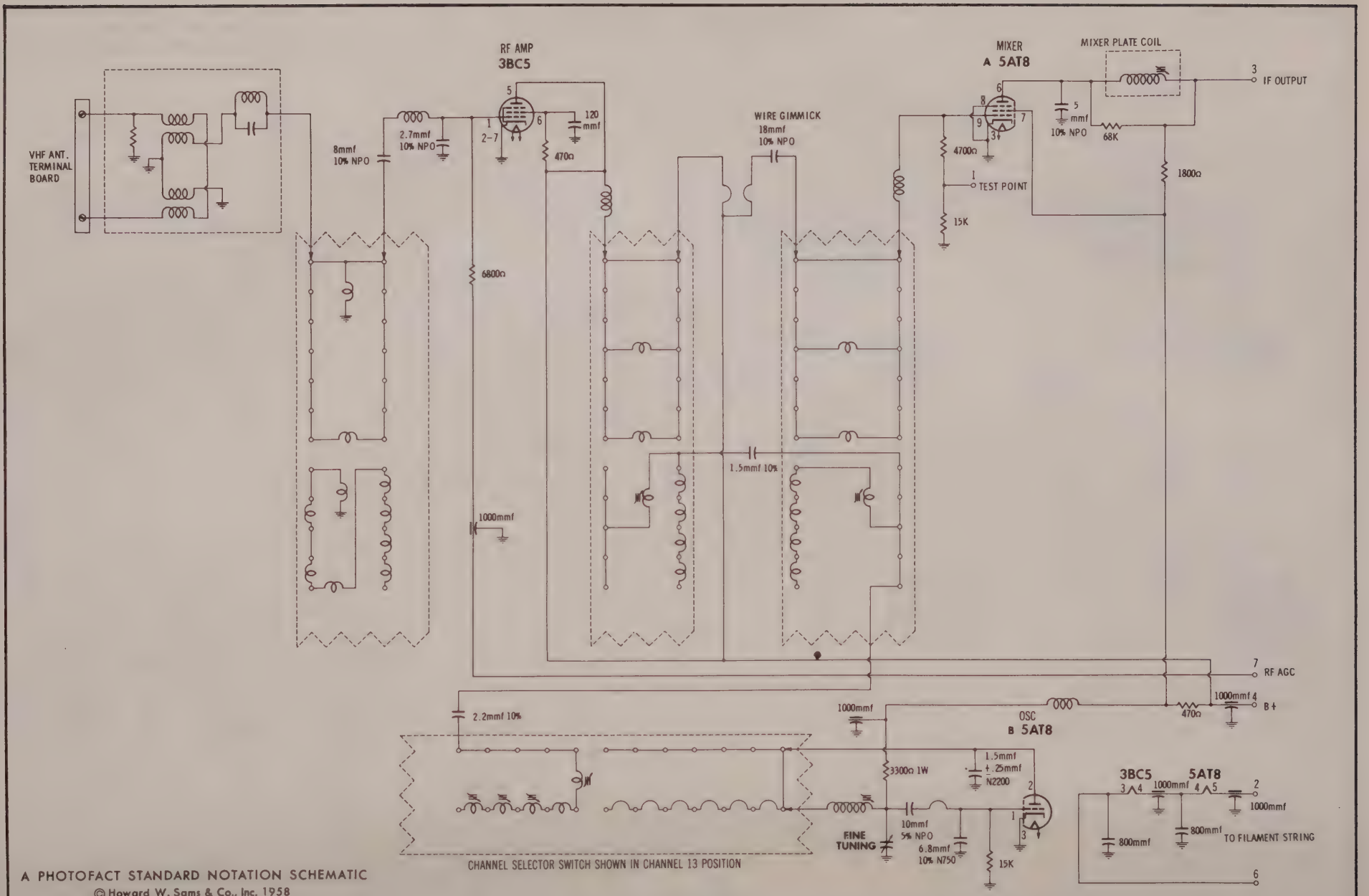
AM TUNER & SWITCHING

EMERSON MODELS 1282, X, 1283, X, 1284, X, 1285, 1286, 1287 (Ch. 120380H, 381M, 388H, 389M, 412H, HC, 413M, MC, 414H, 437HC, 438MC)



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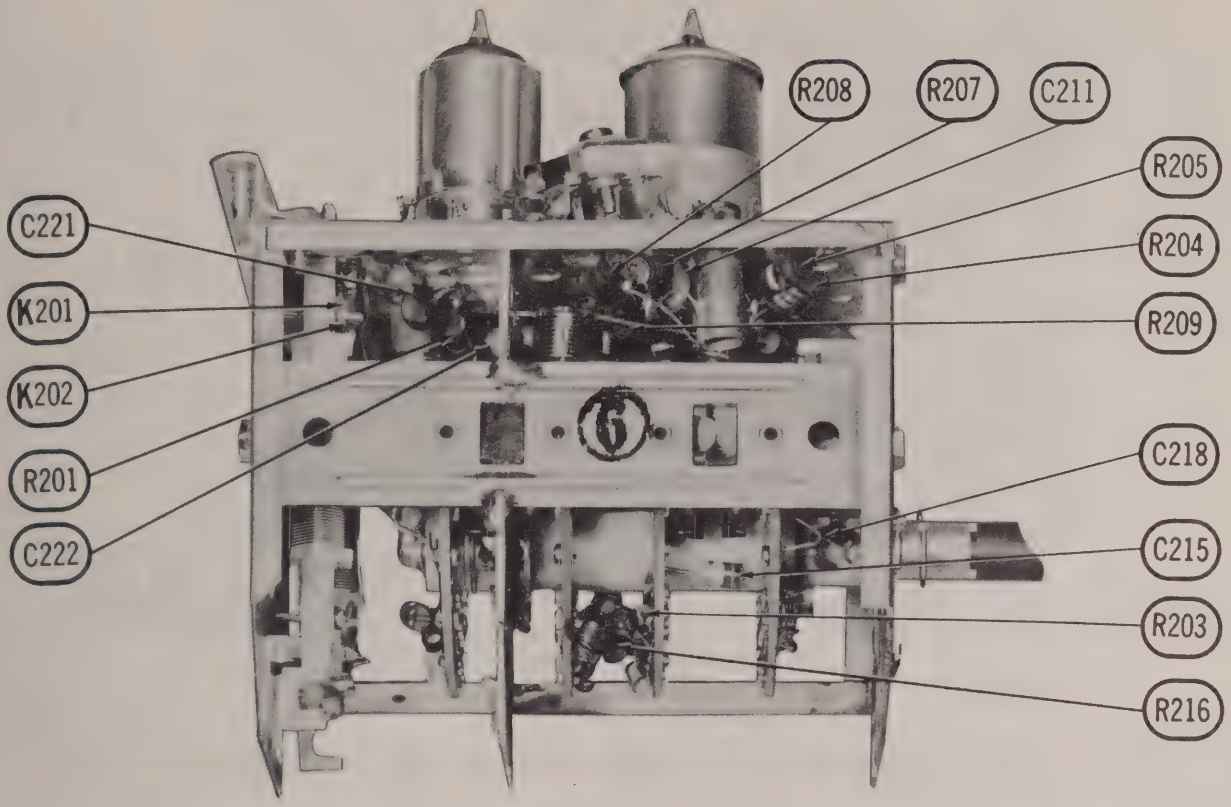
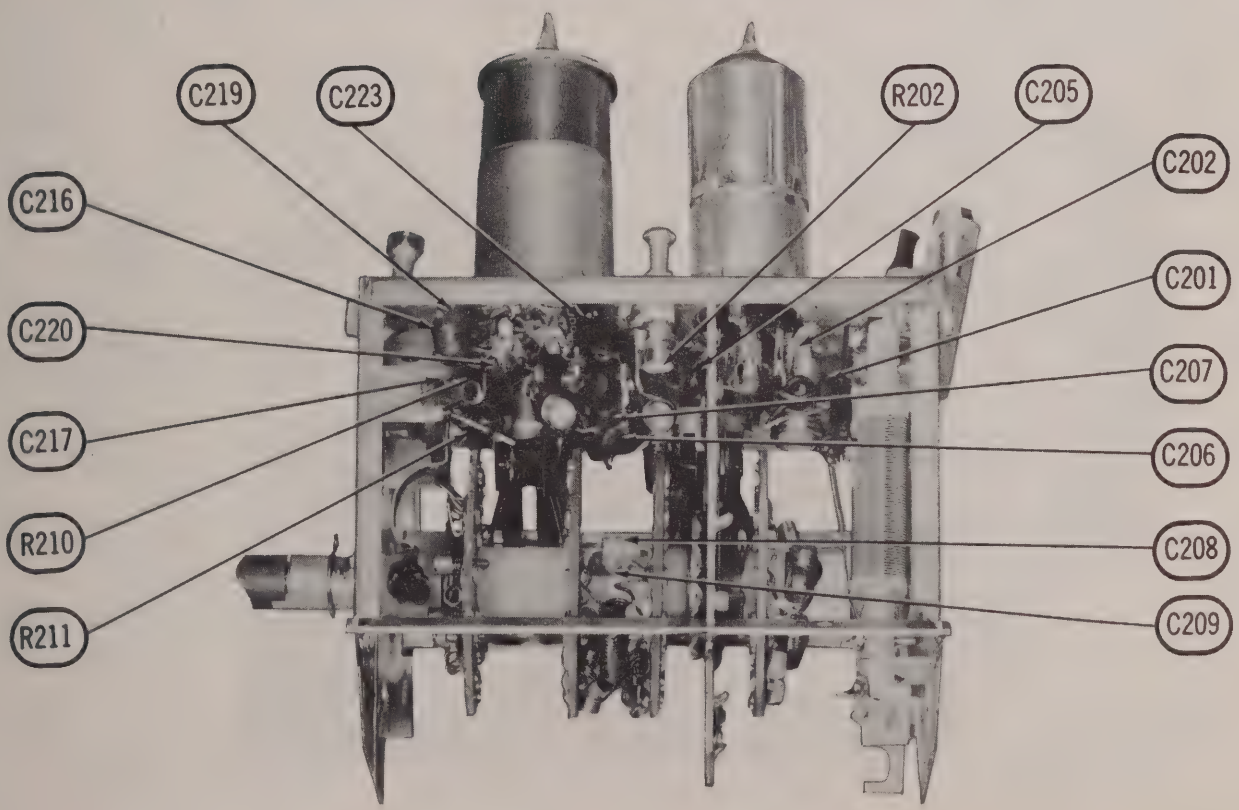
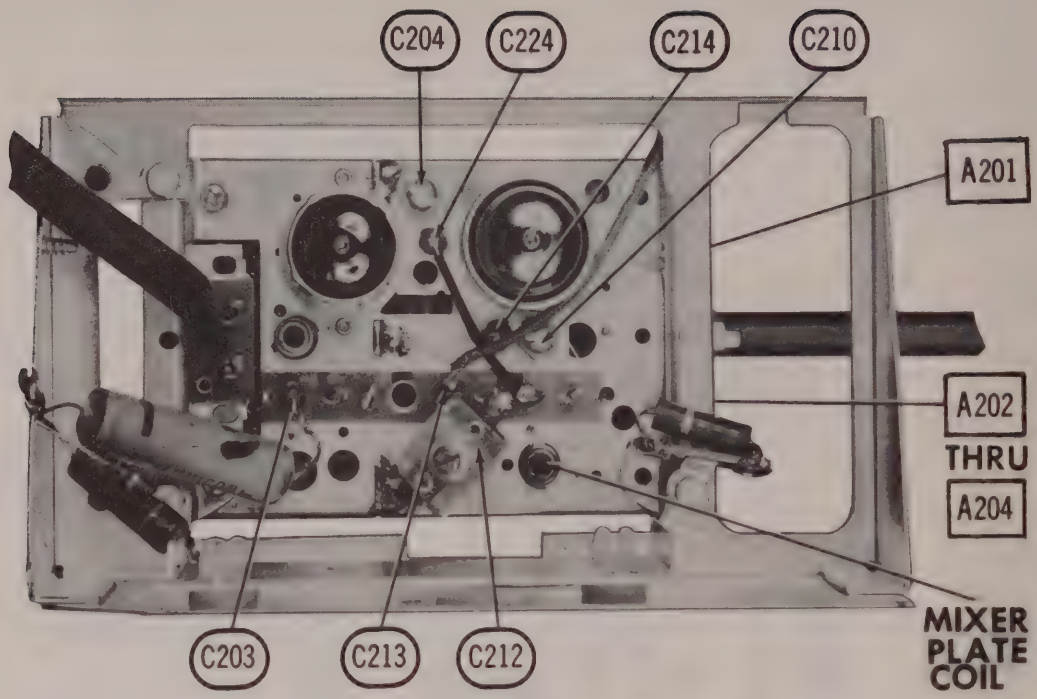
VHF TUNER #471055 MODIFIED



RF TUNER - LEFT SIDE



RF TUNER - RIGHT SIDE



RF TUNER—TOP VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a TV station signal and turn Picture Stabilizer (R9) fully clockwise.

Place a jumper across C43 which is in parallel with the Horizontal Frequency Coil. Connect a clip lead from pin 7 (grid) of the Horizontal Multivibrator (V9) to chassis.

Set the Horizontal Hold to the center of its range.

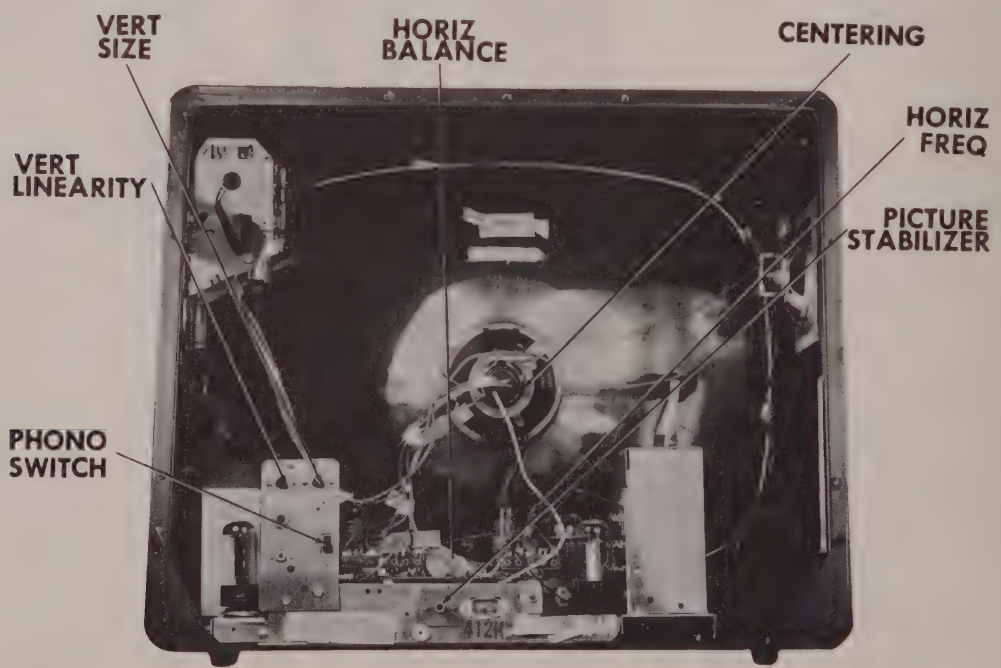
Adjust the Horizontal Balance (R7) until the picture falls into sync (it may sway back and forth).

Remove the jumper from C43 and adjust the Horizontal Frequency Slug (B1) for same sync condition as in previous step.

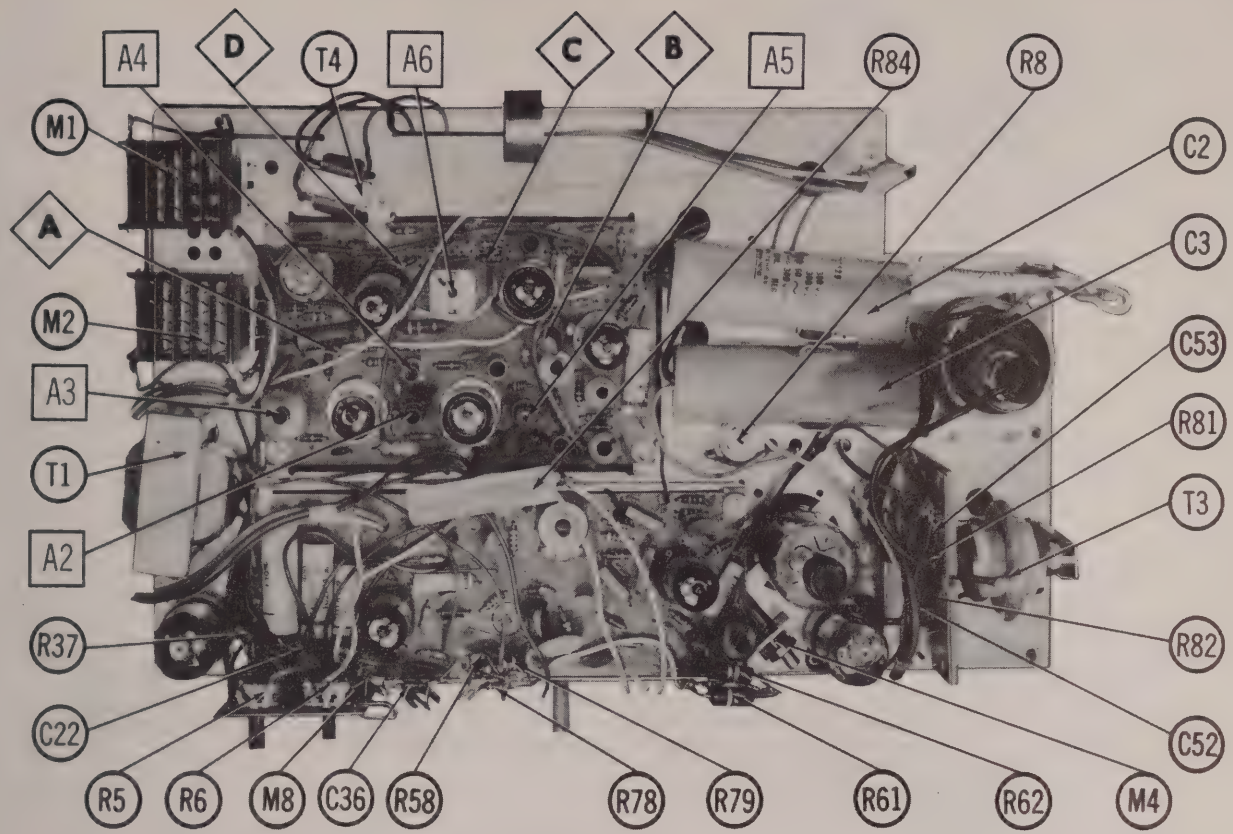
Remove the short from the tube grid. The picture should be in sync.

Adjust the Horizontal Drive (R8) as far clockwise as possible without the presence of drive lines.

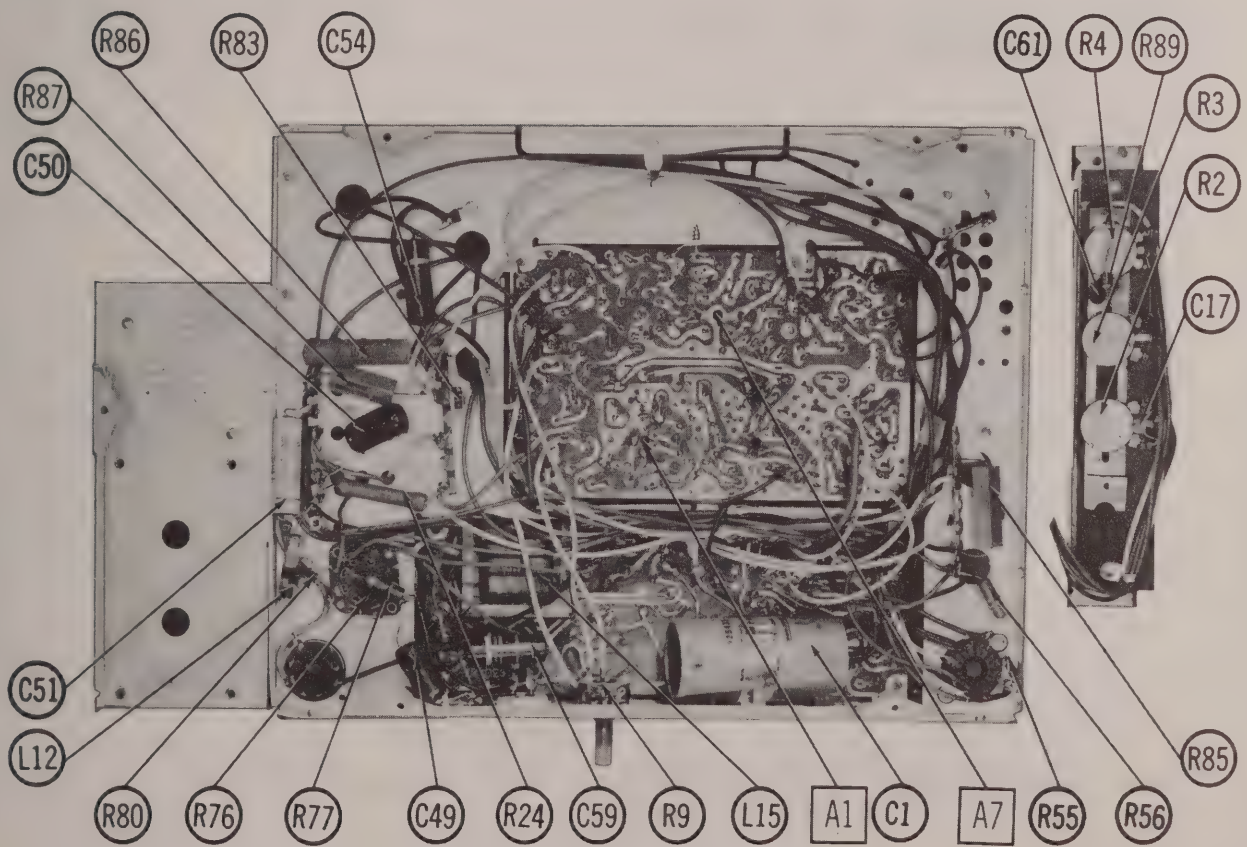
If too much width is encountered remove R79 from the circuit.



CABINET—REAR VIEW



CHASSIS - TOP VIEW



CHASSIS - BOTTOM VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3CB6	1meg	56Ω	3.5Ω	4.5Ω	†2500Ω	†2500Ω	0Ω		
V2	5AM8	180Ω	.9Ω	†2500Ω	5.5Ω	7Ω	†2500Ω	.1Ω	7500Ω	0Ω
V3	12BY7A	• 40Ω	470K	0Ω	8.5Ω	8.5Ω	7Ω	†5000Ω	†2000Ω	0Ω
V4	5U8	†20K	47K	†25K	10Ω	8.5Ω	†2500Ω	0Ω	0Ω	2.7meg
V5	3AV6	2.2meg	0Ω	11.5Ω	11Ω	0Ω	0Ω	†220K		
V6	5AQ5	470K	470Ω	11Ω	10Ω	†3500Ω	†2000Ω	470K		
V7	6CG7	‡3meg	• 550K	0Ω	16Ω	14.5Ω	†8600Ω	†1meg	3300Ω	0Ω
V8	12W6GT	NC	14.5Ω	†350Ω	†27K	2.2meg	TP	11.5Ω	• 500Ω	
V9	6CG7	†120K	• 140K	1200Ω	17Ω	16Ω	†15K	2meg	1200Ω	0Ω
V10	12DQ6A	TP	22Ω	TP	†9000Ω	2.2meg	NC	19Ω	23Ω	TOP CAP ‡13Ω
V11	12D4	NC	NC	¶3meg	NC	†6Ω	NC	19Ω	17Ω	
V12	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡550Ω
V13	21DAP4	1.5Ω	10K	‡68K	†0Ω	NC	NC	• 190K	0Ω	
V201	3BC5	1meg	0Ω	3.5Ω	3Ω	†3000Ω	†3500Ω	0Ω		
V202	5AT8	15K	†6700Ω	0Ω	3Ω	1.5Ω	†3800Ω	†6700Ω	0Ω	133K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

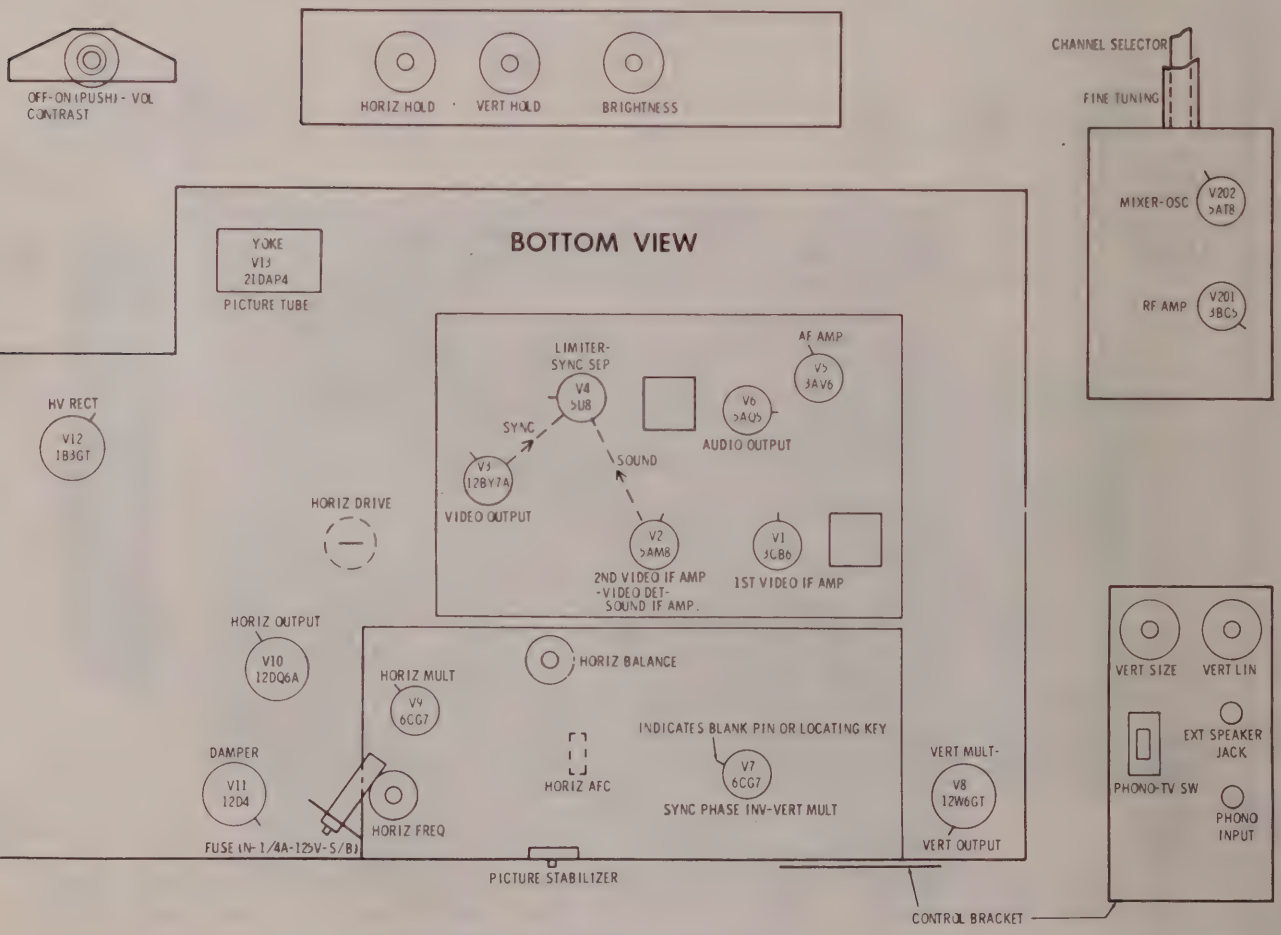
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT. THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

† MEASURED FROM 260V SOURCE.

‡ MEASURED FROM PIN 3 OF V11.

NC NO CONNECTION.

TP TIE POINT.



TUBE PLACEMENT CHART

DISASSEMBLY INSTRUCTIONS

MODEL 321N72-A-3730

CHASSIS REMOVAL

1. Remove 7 push-on type knobs from the front.
2. Remove 5 wood screws from the rear cover. Remove the rear cover.
3. Remove 2 wood screws holding the antenna terminal board.
4. Remove the speaker leads, picture tube socket, HV lead and yoke clamp.
5. Remove 2 wood screws holding the top chassis brace.
6. Remove 4 chassis bolts from the bottom.
7. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS

Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Wells-Gardner MODELS 321N72-A-3730, 321N72-A-3791, 2321N72-A-3732, 2321N72-A-3793
MANUFACTURER	Wells-Gardner Co., 2701 N. Kildare Avenue, Chicago 39, Illinois
TYPE SET	Television Receiver
TUBES	Fourteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 145 Watts, 1.3 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the rear cover. Supply power to the receiver. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, through a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 wood screws from the trim at the top of the safety glass. Tilt glass out at the top and lift up to remove.

FOCUS

Adjust the beam alignment magnet on the neck of the picture tube for best focus.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate audio detector buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart).

FUSE DEVICE

A 7.5Ω fusible resistor (R62) is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

WELLS-GARDNER MODELS 321N72-A-3730, 321N72-A-3791, 2321N72-A-3732, 2321N72-A-3793

SET 408

FOLDER 3

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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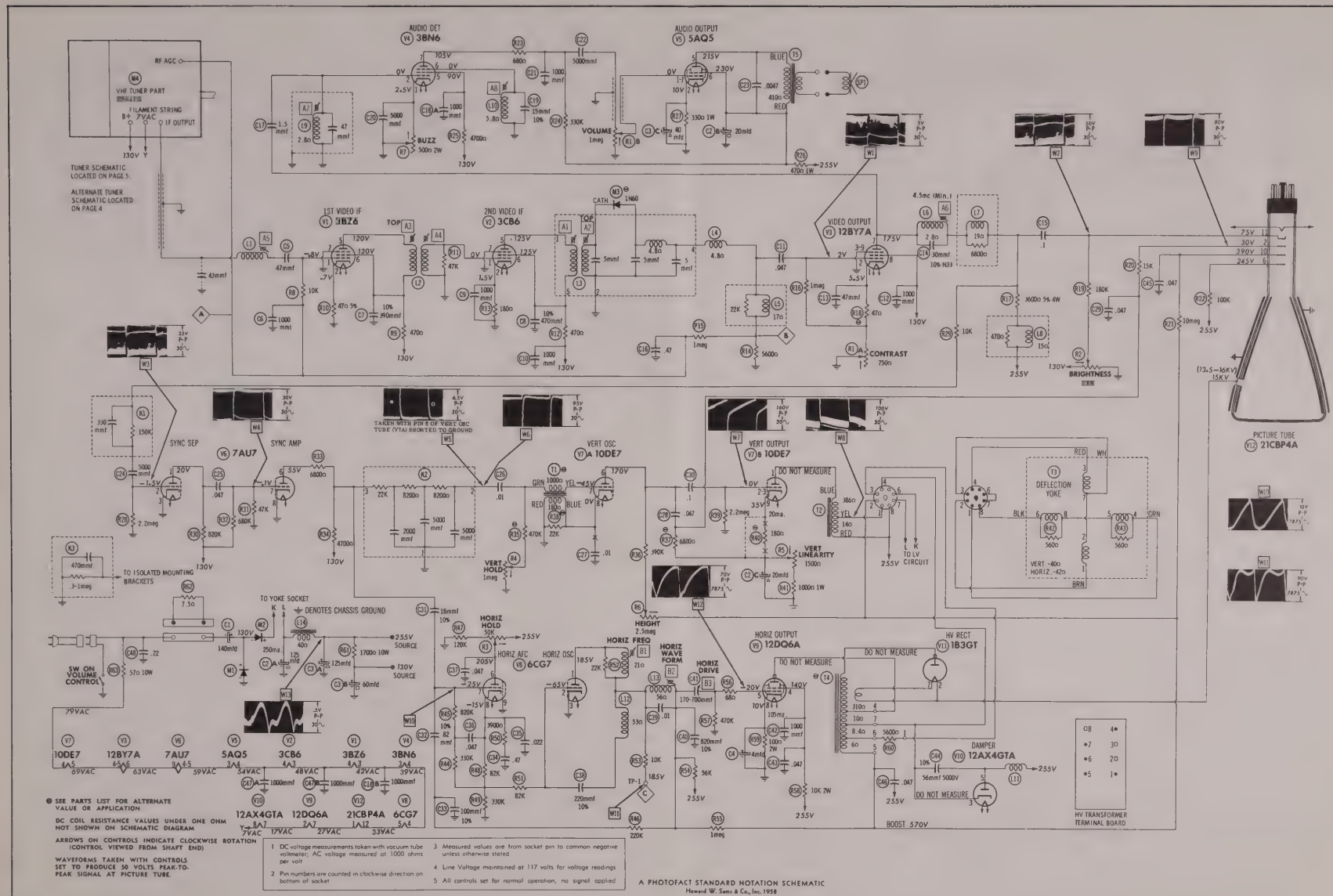
H402R

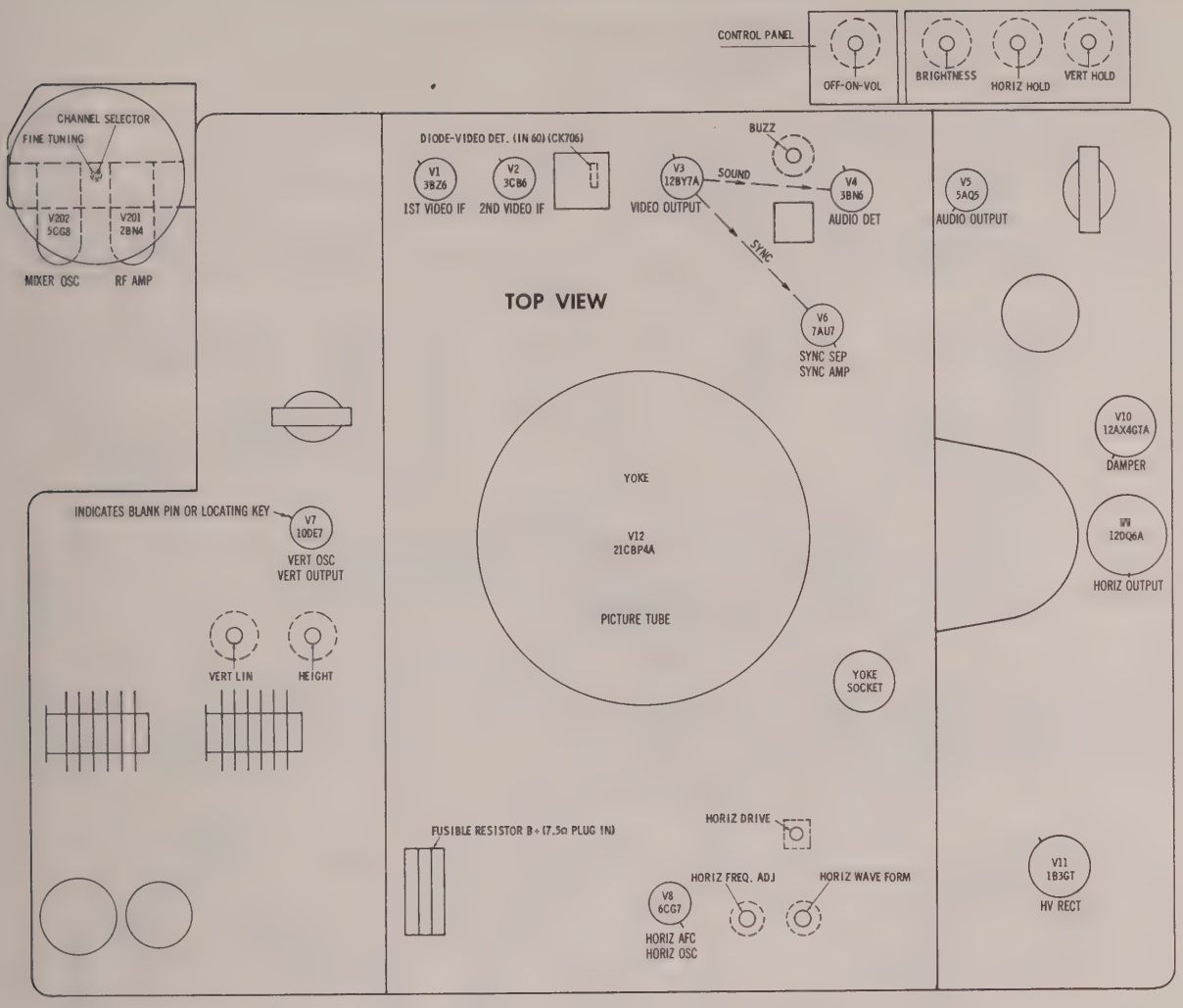

AUDIO DET V4 3BN6
AUDIO OUTPUT V5 5AQ5
RF AGC
VHF TUNER PART
FILAMENT STRING
B+ 7VAC
IF OUTPUT
TUNER SCHEMATIC LOCATED ON PAGE 5.
ALTERNATE TUNER SCHEMATIC LOCATED ON PAGE 4
BUZZ
VOLUME 1meg
1ST VIDEO IF V1 3BZ6
2ND VIDEO IF V2 3CB6
CATH 1N60
VIDEO OUTPUT V3 12BY7A
CONTRAST 750Ω
BRIGHTNESS
PICTURE TUBE V12 21CBP4A
SYNC SEP
SYNC AMP V6 7AU7
TAKEN WITH PIN 8 OF VERT OSC TUBE (V7A) SHORTED TO GROUND
VERT OSC V7A 1ODE7
VERT OUTPUT V7B 1ODE7
DO NOT MEASURE
DEFLECTION YOKE
VERT LINEARITY
VERT HOLD
TO ISOLATED MOUNTING BRACKETS
TO YOKE SOCKET
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
HORIZ HOLD
HORIZ AFC
HORIZ OSC
HORIZ FREQ
HORIZ WAVE FORM
HORIZ DRIVE
HORIZ OUTPUT V9 12DQ6A
HV RECT V11 1B3GT
DAMPER V10 12AX4GTA
HEIGHT 2.5meg
TO LV CIRCUIT
HV TRANSFORMER TERMINAL BOARD
BOOST 570V
10DE7 12BY7A 7AU7 5AQ5 3CB6 3BZ6 3BN6
12AX4GTA 12DQ6A 21CBP4A 6CG7
1 DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

WELLS-GARDNER MODELS 321N72-A-3730, 321N72-A-3791, 2321N72-A-3732, 2321N72-A-3793

FOLDER 3

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

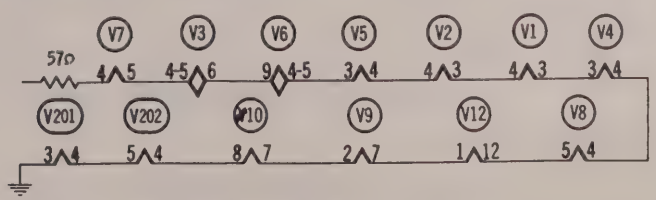
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R62), Rectifier (M1, M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, V2, Diode (M3), V3**
No pic, no sound, has snow - **V201, V202**
No pic, has sound, has raster - **V3, V12**
Has pic, no sound - **V4, V5**

SYNC FAILURE
No vert. sync - **V6**
No horiz. sync - **V6, V8**
No vert. or horiz. sync - **V6**

SWEEP FAILURE
No raster, has sound - **V8, V9, V10, V11, V12**
No vertical deflection - **V7**
Poor vert. linearity of foldover - **V7**
Poor horiz. linearity or foldover - **V8, V9, V10**
Narrow picture - **V8, V9, V10, M1, M2**
Vert. off freq. - **V7**
Horiz. off freq. - **V8**

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



SET 408 FOLDER 3

WELLS-GARDNER MODELS 321N72-A-3730, 321N72-A-3791, 2321N72-A-3732, 2321N72-A-3793

FOLDER 3

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 4 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Keep sweep generator output set for approximately 4 volts peak to peak on the scope throughout the "Video IF Alignment".

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001mfd	High side to pin 1 (grid) of 3CB6 (V2). Low side to chassis.	44.0MC (10MC Swp)	42.8MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 10K to point (B). Low side to chassis. (Across video det. load).	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	"	High side to pin 1 (grid) of 3BZ6 (V1). Low side to chassis.	"	42.8MC 43.9MC 44.5MC 45.75MC	"	"	A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.
3.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	"	"	"	"	A5, Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. If necessary, repeat steps 1, 2, and 3.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.005mfd	High side to point (B). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe to pin 11 (cathode) of picture tube. Common to chassis.	A6	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV station and reduce the signal strength by use of an attenuator, or similar device, until a hiss is heard in the sound.
Adjust A7, A8 and buzz control (R7) for maximum undistorted sound and MINIMUM buzz. If the hiss disappears during alignment, further reduce the signal until the hiss returns.

FOR TUNER ALIGNMENT INSTRUCTIONS SEE PAGE 6.

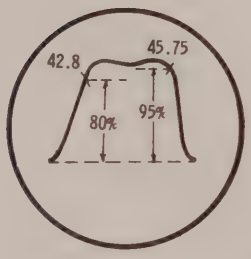


FIG.1

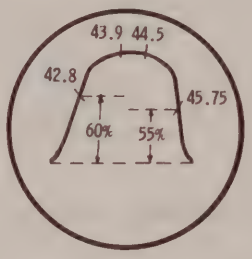


FIG.2

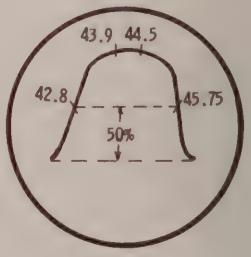
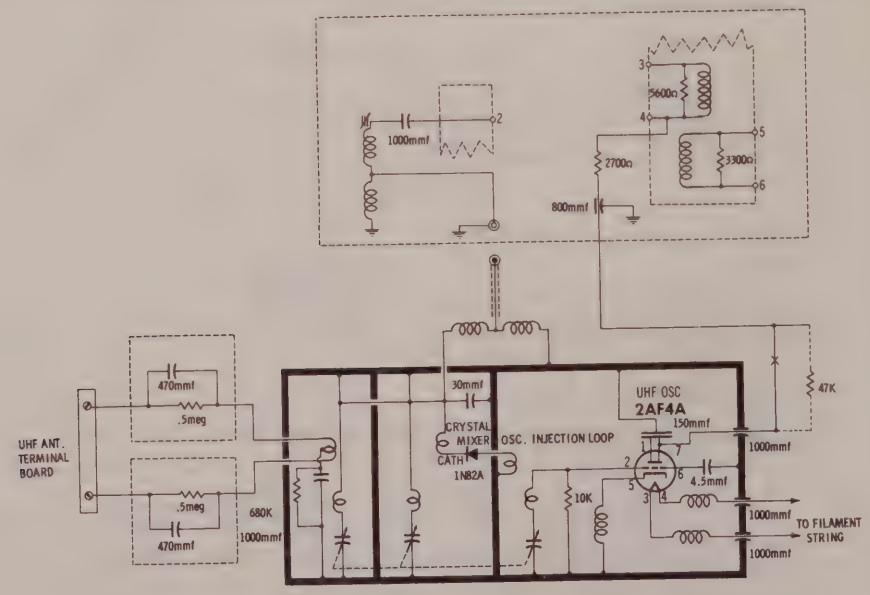
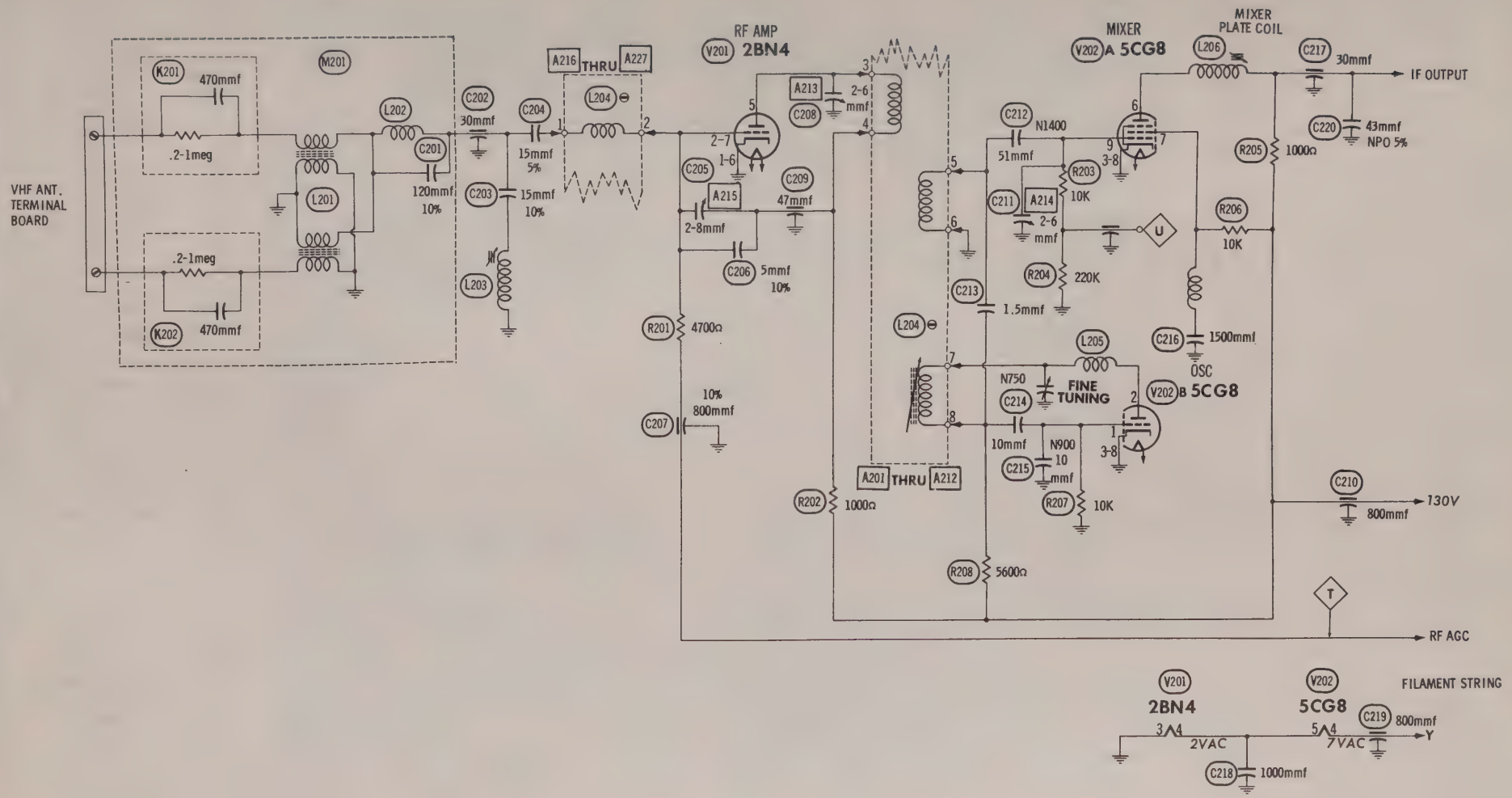


FIG.3



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

UHF TUNER #25A1159



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

VHF TUNER #25A1158

WELLS-GARDNER MODELS 321N72-A-3730, 321N72-A-3791, 321N72-A-3732, 321N72-A-3793

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video detector load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point ⓣ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point ⓓ . Low side to chassis.	A213, A214	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202.
3.	"	"	"	"	"	Vert. Amp. thru detector (Fig. 203) to plate of 1st. video IF tube. Low side to chassis.	A215	Reduce bias to -1.5 volts. Adjust for MINIMUM response.
4.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

ANTENNA TRAP ALIGNMENT

Some types of interference can be reduced by adjusting A228. Observe the picture and adjust A228 for MINIMUM interference.

UHF ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

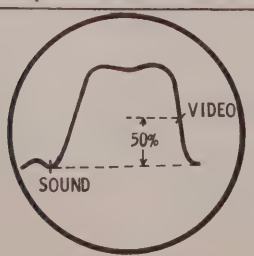


FIG. 201

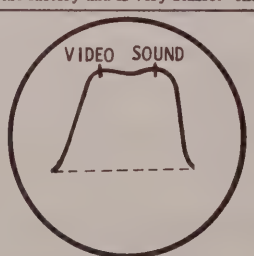


FIG. 202

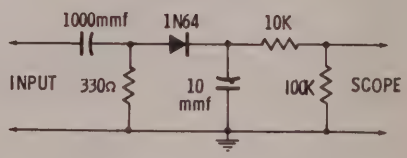


FIG. 203

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st Video IF Amp.	3BZ6	
V2	2nd. Video IF Amp.	3CB6	
V3	Video Output	12BY7A	
V4	Audio Det	3BN6	
V5	Audio Output	5AQ5	
V6	Sync Sep. -Sync Amp.	7AU7	

ITEM No.	USE	TYPE	NOTES
V7	Vert. Osc. -Vert. Output	10DE7	
V8	Horiz. AFC-Horiz. Osc.	6CG7	
V9	Horiz. Output	12DQ6A	
V10	Damper	12AX4GTA	
V11	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	Wells-Gardner PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V12	21CBP4A		21CBP4-A ①	21CBP4/ 21CBP4A ②	①"Silverama" ② ②"Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Wells-Gardner PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.	NOTES
C1	140	150	45X421	AFH31-23	XA0261	FP117	TMS-24	T-055	TVL-1428	
C3A	±25	300	45X421	AFH4-03-60	BG280 FP328 BBR20-150	FP328 TC36		T-248 MT-3516	*R2376	
B	±20	300								
C	±20	50								
D3A	±25	300	45X430	AFH3-09-82	D0046 FP430. 76 BR505	FP430. 76 TC65	TMT-36	T-115 MT-0550	TVL-3574. 6	
B	±60	300								
C	±40	50								
C4	4	50	45X418	PRS150V4	BBR4-50	TC30	TD-4-50	MT-0504	TS-1303	

* Non-catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Wells-Gardner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	47			SI 47	DS-470	LT6Q47	GP-47	UC-5447	5GA-Q47	
C6	1000			BPD-001	DD-102	BYA6DL	ED-1000	DC521	6HK-DL	
C7	390				DS-391	5R5T39	ED-390		MS-339	10%
C8	470				DS-471	5RT47	ED-470		MS-347	10%
C9	1000			BPD-001	DD-102	BYA6DL	ED-1000	DC521	5HK-DL	
C10	1000			BPD-001	DD-102	BYA6DL	ED-1000	DC521	6HK-DL	
C11	.047	200		P288N-047	DF-503	CUB4S47		GEM-4147	2TM-S47	
C12	1000			BPD-001	DD-102	BYA6DL	ED-1000	DC521	5HK-DL	
C13	47			SI 47	DS-470	LT6Q47	GP-47	UC-5447	5GA-Q47	
C14	30									N33 10%
C15	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C16	.47	200		P388N-47		CUB2P47		GEM-3047	2TM-P47	
C17	1.5			NPO-SI 1.5	TCZ-1R5	CUV15C	TCO-1.5	ZT-5S15	5TCCB-V15	
C18A	1000		80X3	BPD-2X001	DD2-102	BYC6DD1	ED2-001	DCD52	5HK-2DL	
B	1000									
C19	15			NPO-DI 15	DD-150	LL0Q15	ED-15		5TCC-Q15	10%
C20	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C21	1000			BPD-001	DD-102	BYA6DL	ED-1000	DC521	5HK-DL	
C22	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C23	.0047	600		P688N-0047	DS-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C24	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C25	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C26	.01	400		P488N-01	DS-103	CUB4SI	GP-10000	GEM-411	4TM-SI	
C27	.01	400		P488N-01	DS-103	CUB4SI	GP-10000	GEM-411	4TM-SI	
C28	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C29	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C30	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C31	18		RCM20B180K	1469-00018	DS-180	22R5Q18	ED-18		5MS-418	10%
C32	82		RCM20B820K	1469-00082	DS-820	22R5Q82	ED-82		MS-482	10%
C33	100			1469-0001	DS-101	22R5T1	ED-100	MCB335	MS-31	10%
C34	.47	200		P288N-47		CUB2P47		GEM-2047	2TM-P47	
C35	.022	200		P288N-022	DD-203	CUB2S22	ED-02	GEM-4122	2TM-S22	
C36	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C37	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C38	220			1469-00022	DS-221	22R2T22	ED-220		MS-322	10%
C39	.01	400		P488N-01	DS-103	CUB4SI	GP-10000	GEM-411	4TM-SI	
C40	820		RCM20B821K	1464-00082		1R5T82	CY15C82K		MS-382	10%
C41	170-700		17A271							
C42	1000			BPD-001	DD-102	BYA6DL	ED-1000	DC521	5HK-DL	
C43	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C44	56	5000	47X755							10%
C45	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C46	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C47A	1000		80X3	BPD-2X001	DD2-102	BYC6DD1	ED2-001	DCD521	5HK-2DL	
B	1000									
C48	.22	400		P488N-22		CUB4P22		GEM-4022	4TM-P22	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Wells-Gardner PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750Ω	½	76X30	F1-2	RTV-646			Contrast
B	1meg	½		R2-51	Not Req.	* Ⓢ-1074	**UE37898	Volume
C	Switch			KB-1	Not Req.	Not Req.		
R2A	500K	½	40X423	B-59	A47-500K-8	QU-133	TA55L	Brightness
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	50K	½	40X434	B-31	A47-50K-8	QU-123	TA54L	Horiz. Hold
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	1meg	½	40X425	B-69	A47-1meg-8	QU-137	TA16L	Vert. Hold
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	1500Ω	½	40X399	AB-6	A47-1500-8	QU1-109	TAP152L	Vert. Lin.
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R6A	2.5meg	½	40X396	EK-53	A47-2.5meg-8	QU-239	TA255L	Height
B	Shaft			Not Req.	FKS-1/4	TQ	Not Req.	
R7	500Ω	2(WW)	40X397		39-500		FL-500	Buzz

* "Concentrikit" Equivalent: K-2 Kit, Base Elements & Shafts B11-105, P6-102 (Panel) B11-137, R1-126 (Rear) 76-1 (Switch)

** "STA-LOC" Equivalent: FA75IL, OF125A, RU16L, IS187S, U8-41.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Wells-Gardner PART No.	NOTES
R8	10K			
R9	470Ω			
R10	47Ω 5%			
R11	47K			
R12	470Ω			
R13	180Ω			
R14	5600Ω			
R15	1meg			
R16	1meg			
R17	3600Ω 5%	4	43X331	
R18	47Ω			
R19	180K			
R20	15K			
R21	10meg			
R22	100K			
R23	680Ω			
R24	330K			
R25	4700Ω			
R26	470Ω	1		
R27	330Ω	1		
R28	2.2meg			
R29	10K			
R30	820K			
R31	47K			
R32	680K			
R33	6800Ω			
R34	4700Ω			
R35	470K			

ITEM No.	RATING OHMS	RATING WATT	Wells-Gardner PART No.	NOTES
R36	390K			
R37	6800Ω			
R38	22K			
R39	2.2meg			
R40	180Ω			
R41	1000Ω	1		
R42	560Ω			
R43	560Ω			
R44	330K			
R45	820K			
R46	220K			
R47	120K			
R48	82K			
R49	330K			
R50	3900Ω			
R51	82K			
R52	22K			
R53	10K			
R54	56K			
R55	1meg		B4105	
R56	680			
R57	470K			
R58	10K	2		
R59	100Ω	2		
R60	5600Ω			
R61	1700Ω	10	43X294	
R62	7.5Ω		43X380	
R63	57Ω	10	43X301	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA Wells-Gardner PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Osc. Alt. Vert. Osc.	54X19-A 54X19	B6702	A-3003	V402	A-8125	26A03	A-97X	
T2	Vert. Output	51X166	Z1000 ①②	A-3038 ①③	V307 ①④	VO-100 ③	26S73 ③	A-118X ③	
T3A	Yoke-Horiz. (24.5MH	49A403 ④	DF607	MDF-52	Y90F16/43	DY-18A	Y-16	Y-45 &	
B	(90°)-Vert. (39MH)		⑤	⑤	⑤	⑤	⑤	NW2i	
M5	Rear Cover & Centering Device	2A435						YC1	
	Yoke Clamp	50X611						CL-1	
T4	Horiz. Output	53X362C	FB419 ③ *§	HVO-38 ③ * §	XO94 ③ * §	HO-283 *	FLY-16 ③ *§	D-121 *	
	Alt. Horiz. Output	53X362	FB419 ③ *2	HVO-36 ③ * §	XO94 ③ * §	HO-283 *	FLY-16 ③ *§	D-121 *	

① Connect as autoformer.
② Use 9 to 1 turns ratio.
③ Drill new mounting hole(s).
④ Includes resistors (R43, R43).
⑤ Use original rear cover, centering device and horizontal damping network. Connect same as original.
§ This part may be superceded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4	9	9	9	8	9	4
7	7	7	7	3	7	3
8	See Note ⑥ NC	See Note ⑥ NC	See Note ⑥ NC	2	See Note ⑥ NC	2
5	1	1	1	1	1	1

⑥ Install new damping network consisting of approximately 50mmf in series with resistor (R60) across horizontal yoke terminals #3 and #7.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Wells-Gardner PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	6100Ω	3-4Ω	51X185	Z1110	A-3026	AU-802①	A-3877 ①	26S48	S-6X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Wells-Gardner PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	12A527	5A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Wells-Gardner PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	1st. Video IF	9A2389	17-4534	TV-131	4302	VF-4	
L2	2nd. Video IF	9A2390					
L3	3rd. Video IF	9A2391					Complete Assy.
L4	Resonant Choke	9A2375					30 Microhenries
L5	Shunt Peaking Coil	36A22	19-3300 *	TV-199 *	6155 *		290 Microhenries, wound 22K resistor
L6	4.5MC Trap	9A2366	20-1004	TV-151	1469 ▲	SF-3	
L7	Series Peaking Coil	36A38	19-4400 ♦	TV-190 ♦	6132 ♦	VP-7 ♦	350 Microhenries, wound on 6800Ω resistor
L8	Shunt Peaking Coil	36A38	19-4201 †	TV-197†	6154 †		220 Microhenries, wound on 470Ω resistor
L9	Sound IF	9A2400	17-1026	TV-154	1470A ▲		
L10	Quadrature Coil	9A2367	20-1005	TV-121	1480		
L11	RF Choke	9A2380	19-1001	RC-562	4604		1.5 Microhenries

* Parallel with 22K resistor.
♦ Parallel with 6800Ω resistor.
† Parallel with 470Ω resistor.
▲ Disregard tap.
▲ Drill mounting holes

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES PRI.	DC RES SEC.	REPLACEMENT DATA Wells-Gardner PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L12	74Ω *		9A2377		TV-165	6211 ▲		26S-7	Horiz. Freq. * Tapped @ 53Ω Horiz. Waveform. ▲ Enlarge mounting hole
L13	56Ω		9A2372			6215		26S-5	

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT (100 ~\)	REPLACEMENT DATA Wells-Gardner	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L14	.250A	40Ω	1 Hy.	52X95-8	C6037 ①	C-2991 ①		C-2336 ①	26C41	C-27X

① Drill new mounting hole

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Wells-Gardner PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.250A	66X14-C ①	1090A ①	1N1007 ②	RS300SL ① SD94A ②	300 ① M500 ①	① Selenium type. ② Germanium type.
M2	.250A	66X14-C ①	1090A ①	1N1007 ②	RS300SL ① SD94A ③	300 ① M500 ③	③ Silicon type.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA Wells-Gardner PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M3	1N80 *		1N80	1N80	Video Detector (Pigtail)

* Some versions may use CK706 in this application

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	Wells-Gardner PART No	REPLACEMENT DATA	
K1	Sync Coupling	330mmf, 150K	76X13	Sprague	PRC-5
K2	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 22K, 8200Ω 820Ω	76X7	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-110 PC-104 1157M1 1406-01 V-1
K3	Chassis Isolation	470mmf, .3-1meg	76X11	Centralab Sprague	RC-471 R-9177

MISCELLANEOUS

ITEM No.	PART NAME	Wells-Gardner PART No.	NOTES
M4	Tuner	25A1158	VHF Standard Coil Part #FNS-007
	Tuner	25A1159	UHF
M5	Centering Device	2A435	Includes Yoke Rear Cover
	Magnet	2A476	Beam alignment used in some versions

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

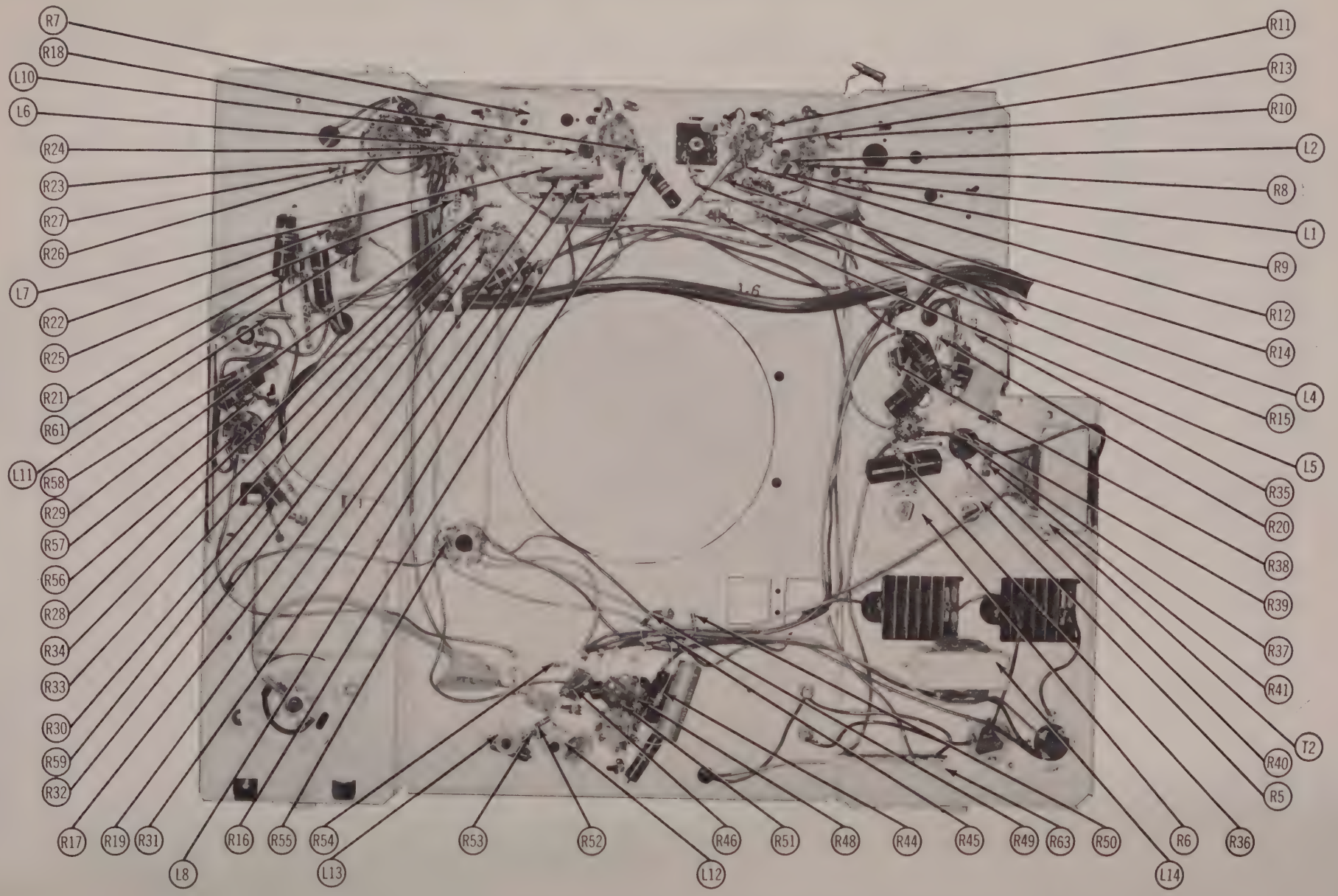
NAME	PART NO.	DESCRIPTION
Safety Glass	17X194-1	
Knob	10A863-1	Channel Selector (Brown)
Knob	10A867-3	Fine Tuning (Brown)
Knob	10A897-6	On-Off-Volume (Brown)
Knob	10A896-1	Contrast (Brown)
Knob	10A898-5	Secondary Controls (Brown)

WIRING DATA

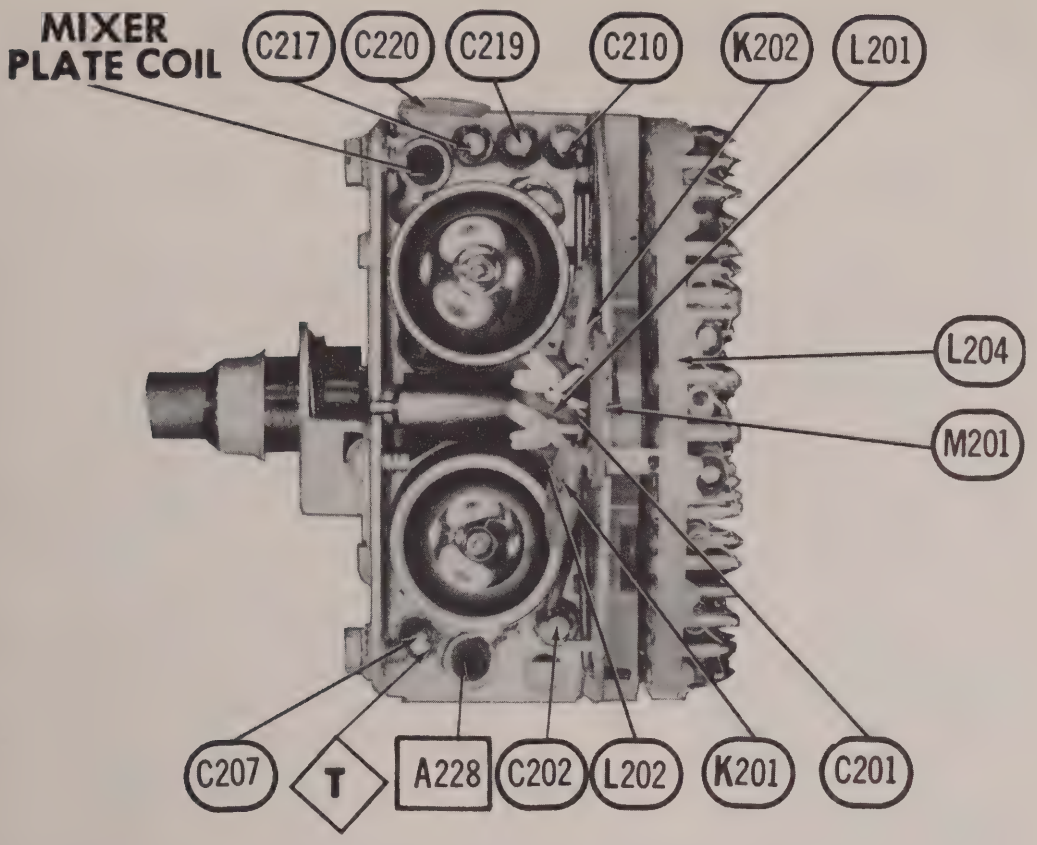
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8736 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8071
300Ω Tuner Input Lead	Use BELDEN No. 8282
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

WELLS-GARDNER MODELS 321N72-A-3730, 321N72-A-3791, 232IN72-A-3732, 232IN72-A-3793

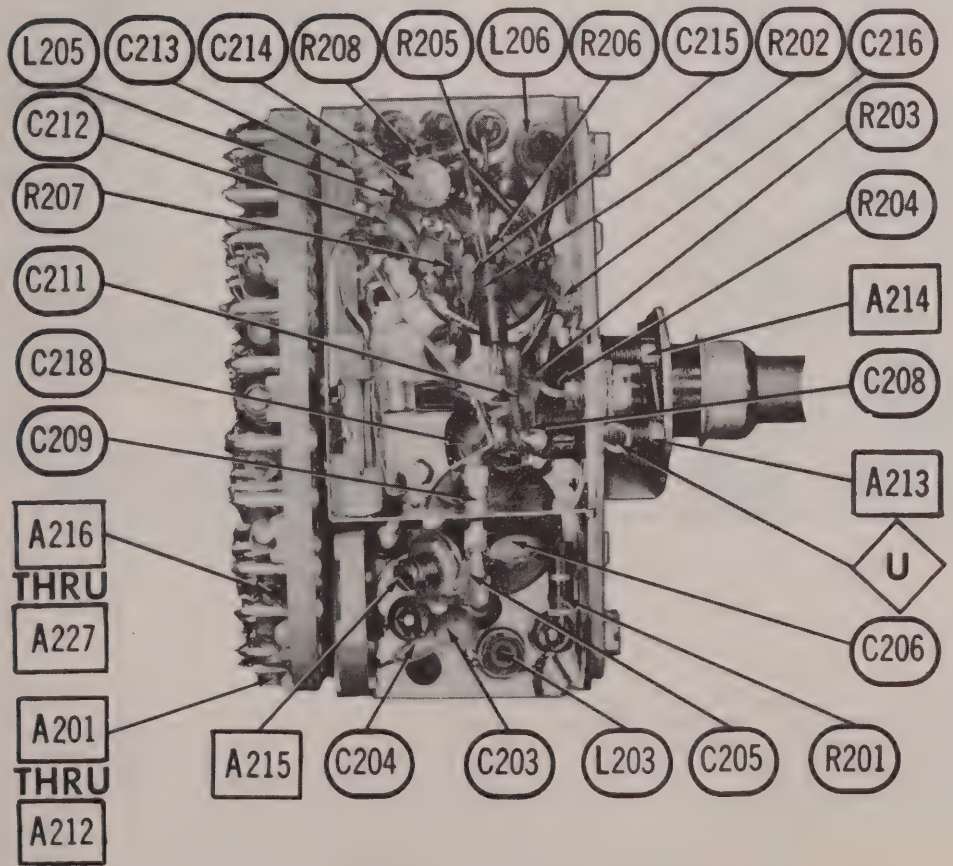
FOLDER 3



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2BN4	
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	PART No.	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	120			NPO-DI 120	DD-121	L10T12	ED-120		5TCC-T12	10%
C202	30									
C203	15			NPO-DI 15	DD-150	L10Q15	ED-15		5TCC-Q15	10%
C204	15				TCZ-15		TCO-15			5%
C205	2-8									
C206	5			NPO-DI 5	DD-050	C10V5C	ED-5	ZT-555	5TCC-Q5	10%
C207	800									10%
C208	2-6									
C209	47									
C210	800									
C211	2-6									
C212	51									N1400
C213	1.5			NPO-SI 1.5	TCZ-1R5	CTA6V15C	TCO-1.5	ZT-5515	5TCCB-V15	
C214	10			N750-SI 10	TCN-10	CTA6Q1U	TC7-10	NT-541	5TCU-Q1	N750
C215	10									N900
C216	1500			BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	①
C217	30									
C218	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C219	800									
C220	43									NPO 5%

① Some versions may use 1000mmf in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	PART No.	NOTES
R201	4700Ω			
R202	1000Ω			
R203	10K			
R204	220K			
R205	1000Ω			
R206	10K			
R207	10K			
R208	5600Ω			

COILS (RF-IF)

ITEM No.	USE	PART No.	NOTES
L201	Ant. Trans.	31T-3066	
L202	IF Trap Coil	34A763	
L203	IF Trap Coil	34A762	
L204	Coil Assy.	31T-3068-004	Includes rotor
L205	Osc. Plate Coil	25A-211-01	
L206	Mixer Plate Coil	31U-580	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	Antenna Isolation	470mmf, .2-1meg	13P-198	
K202	Antenna Isolation	470mmf, .2-1meg	13P-198	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M201	Antenna Input Assy.	31T-2086-01	Includes L201, L202, K201, K202
	Osc. Slug	15A-276	(12 Used)
	Contact Spring	23A-132	(6 Used)

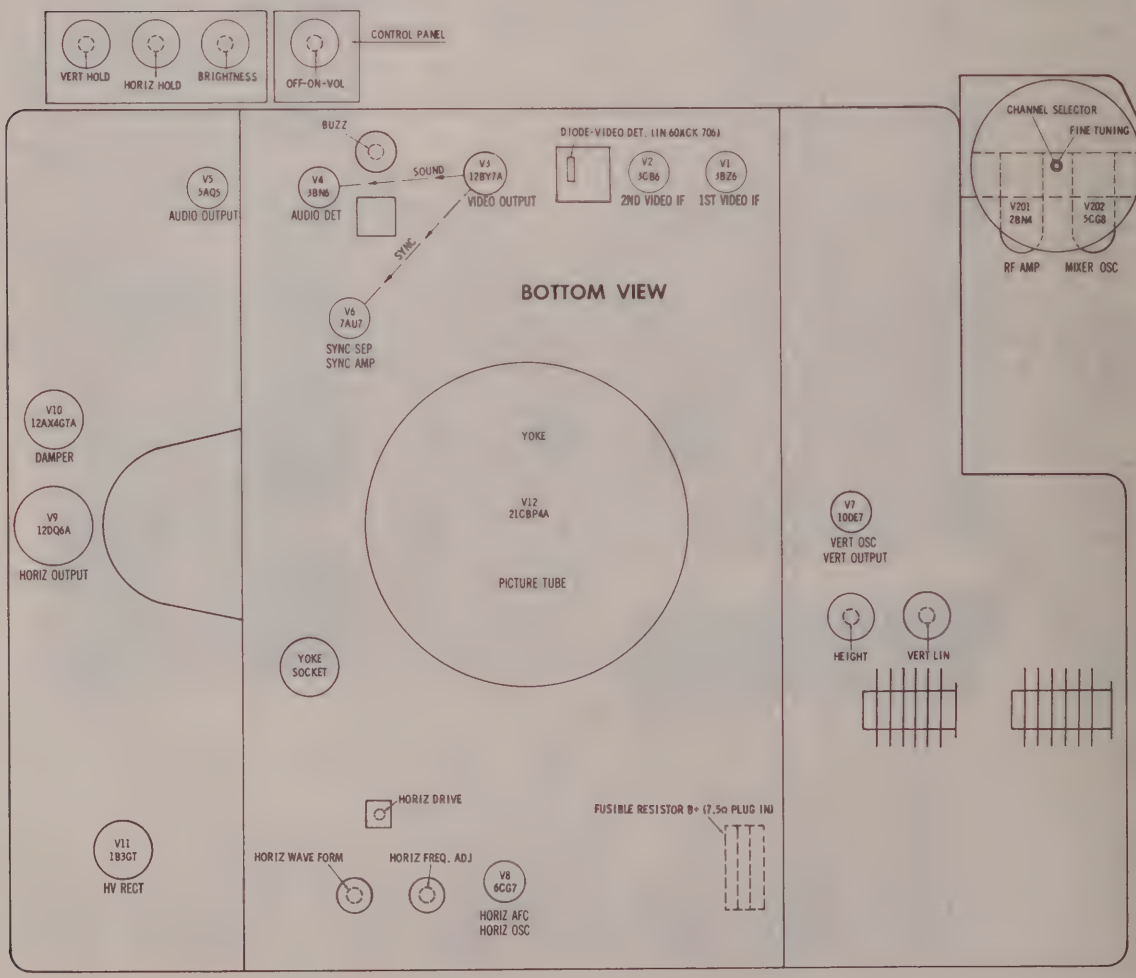
NOTE: PART NUMBERS LISTED ABOVE ARE "STANDARD COIL" PART NO.

CHASSIS TOP VIEW

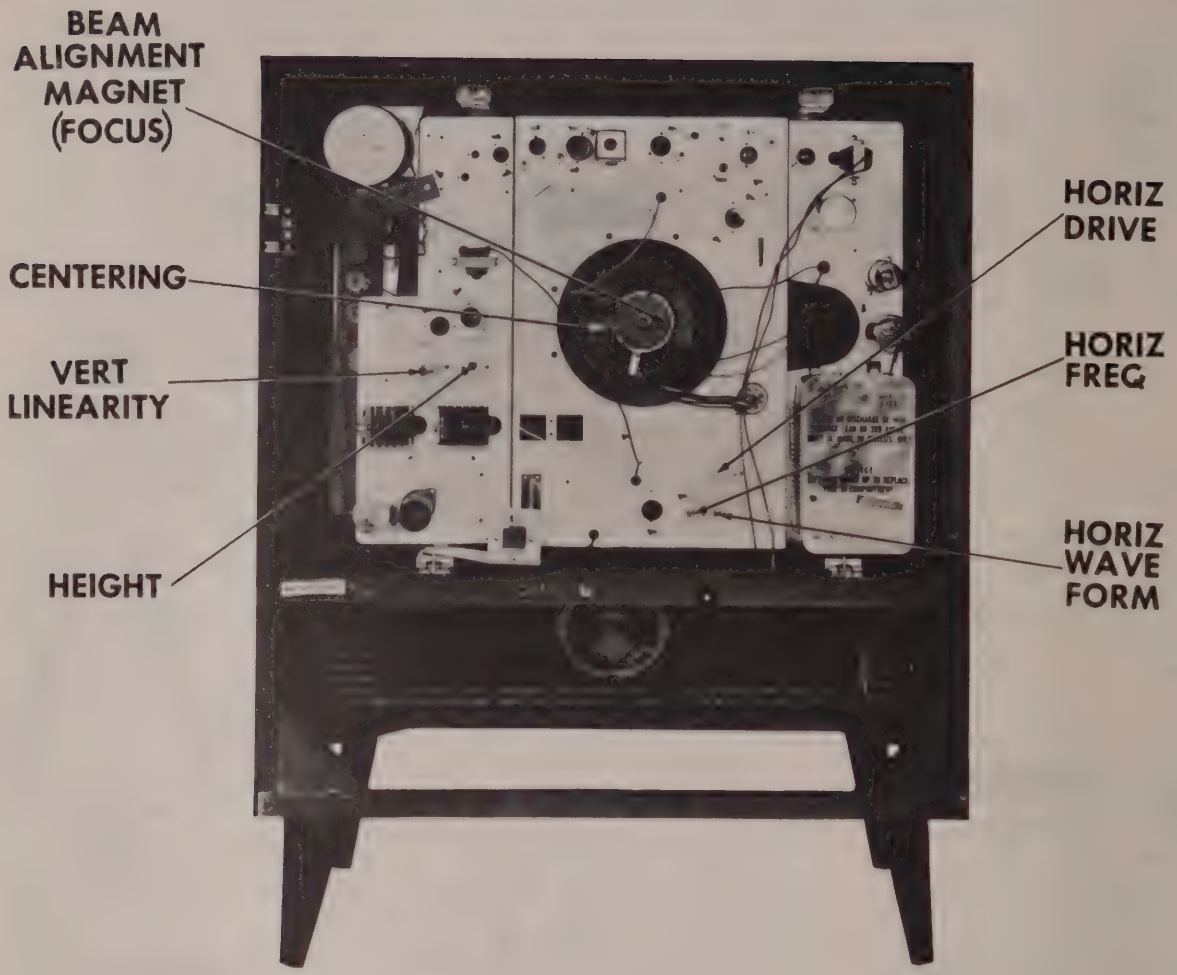
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1meg	47Ω	10Ω	11Ω	†2200Ω	†2200Ω	0Ω		
V2	6CB6	.1Ω	180Ω	11Ω	12Ω	†2200Ω	†2200Ω	0Ω		
V3	12BY7A	•230Ω	1meg	0Ω	17Ω	17Ω	14Ω	†3600Ω	†1700Ω	0Ω
V4	3BN6	•290Ω	2.8Ω	10Ω	9.5Ω	†6400Ω	5.8Ω	†330K		
V5	5AQ5	0Ω	330Ω	13Ω	12Ω	†880Ω	†470Ω	0Ω		
V6	7AU7	†820K	2.2meg	0Ω	13Ω	13Ω	†13K	47K	0Ω	14Ω
V7	10DE7	†400Ω	2.2meg	2.2meg	18Ω	17Ω	•‡1.6meg	•850K	170Ω	1600Ω
V8	6CG7	†56K	410K	0Ω	9.5Ω	8.5Ω	•†220Ω	1.4meg	410K	0Ω
V9	12DQ6A	TP	4Ω	NC	†10K	470K	NC	7Ω	100Ω	TOP CAP †10Ω
V10	12AX4GTA	NC	NC	¶	NC	†.1Ω	NC	4Ω	1.5Ω	
V11	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡320Ω
V12	21CBP4A	7Ω	•23K	PIN 6 †100K	PIN 10 ‡10meg	PIN 11 •290K	PIN 12 8.5Ω			
V201	2BN4	0Ω	1meg	0Ω	.5Ω	†2700Ω	0Ω	1meg		
V202	5CG8	10K	†7300Ω	0Ω	1.5Ω	.5Ω	†2700Ω	†12K	0Ω	230K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 255V SOURCE.
‡ MEASURED FROM PIN 3 OF V10.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern. Set the contrast control for a normal picture.

Set the horizontal hold control to the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Connect the vertical amplifier of the scope thru a low capacity probe to point Ⓒ . Low side to chassis. Adjust the horizontal waveform slug (B2) until the waveform is similar to Fig. 4. While making this adjustment, keep the picture in sync with the horizontal hold control.

Turn the horizontal hold control fully clockwise. Turn B1 clockwise until the picture is just ready to pull in sync.

Turn the horizontal hold control fully counter clockwise. The picture should remain in sync. Switch off channel and back again. Retouch B1 if necessary.

While receiving a signal from a station, turn the contrast control fully counter clockwise and turn the brightness up so that the picture appears to be washed out. Turn the horizontal drive trimmer (B3) clockwise until white vertical bars appear in the left center of the raster, then slowly turn B3 counter clockwise until the bars disappear.

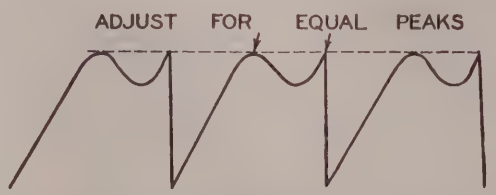


FIG. 4

SET 408 FOLDER 4

ZENITH CHASSIS 17A30,
Q, U, 17A31Q, 3Z01

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 8 push-on type knobs from the front.
2. Remove 7 metal screws holding the rear cover, the tuner antenna leads and the rear cover.
3. Remove the speaker leads, pilot lamp lead and 2 tuner leads.
4. Remove 2 metal screws holding the tuner bracket.
5. Remove 2 metal screws, inside the cabinet, holding the On-Off-Volume Control bracket.
6. Remove 4 hex nuts holding the speaker.
7. Remove 4 chassis bolts from the bottom.
8. Remove the chassis.

MODEL A2223R (CH.17A30)

TRADE NAME	Zenith	MODELS	CHASSIS
		A2221R, Y, A2223E, R, Y, A2245, E, R, A2246E, R, A2252R, A2253E, R, A2282E, R, A2673E, R	17A30
		A3001E, R, A3006E, H, R, A3007R, A3008E, R, A3009E, H	17A30Q
		A2221RU, YU, A2223EU, RU, YU, A2245EU, RU, U, A2246EU, RU, A2252RU, A2253EU, RU, A2282EU, RU, A2673EU, RU	17A30U
		A3000E, R, A3004, E, R	17A31Q
		Amplifier	3Z01
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Avenue, Chicago 39, Illinois		
TYPE SET	Television Receiver		
TUBES	Seventeen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 176 Watts, 1.66 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF,	Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, as the Channel Selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 3 push-on type knobs at the top of the safety glass. Remove the metal screws holding the knob escutcheons. Tilt the glass out at the top and lift up to remove.

SPECIAL ADJUSTMENTS

A. AGC
Observe the picture and advance the AGC control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

B. Focus
The focus may be varied by means of a Focus Control. (For location, see tube placement chart.)

C. Fringe Lock
Adjust picture to lock in with hold controls. If picture jitters, tears, etc. adjust Fringe Lock until stable. Readjust the hold controls and check operation on all channels in the area.

D. Width
The width may be varied by means of a metallic sleeve located between the Yoke and the Picture Tube neck. Adjust sleeve in or out of the yoke for a picture slightly larger than necessary to fill the screen.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency Coil is used as the Horizontal Hold. Adjust the Horizontal Hold until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz Control for MINIMUM buzz and maximum sound. (For location, see tube placement chart.)

FUSES

One fuse is used for horizontal sweep circuit protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

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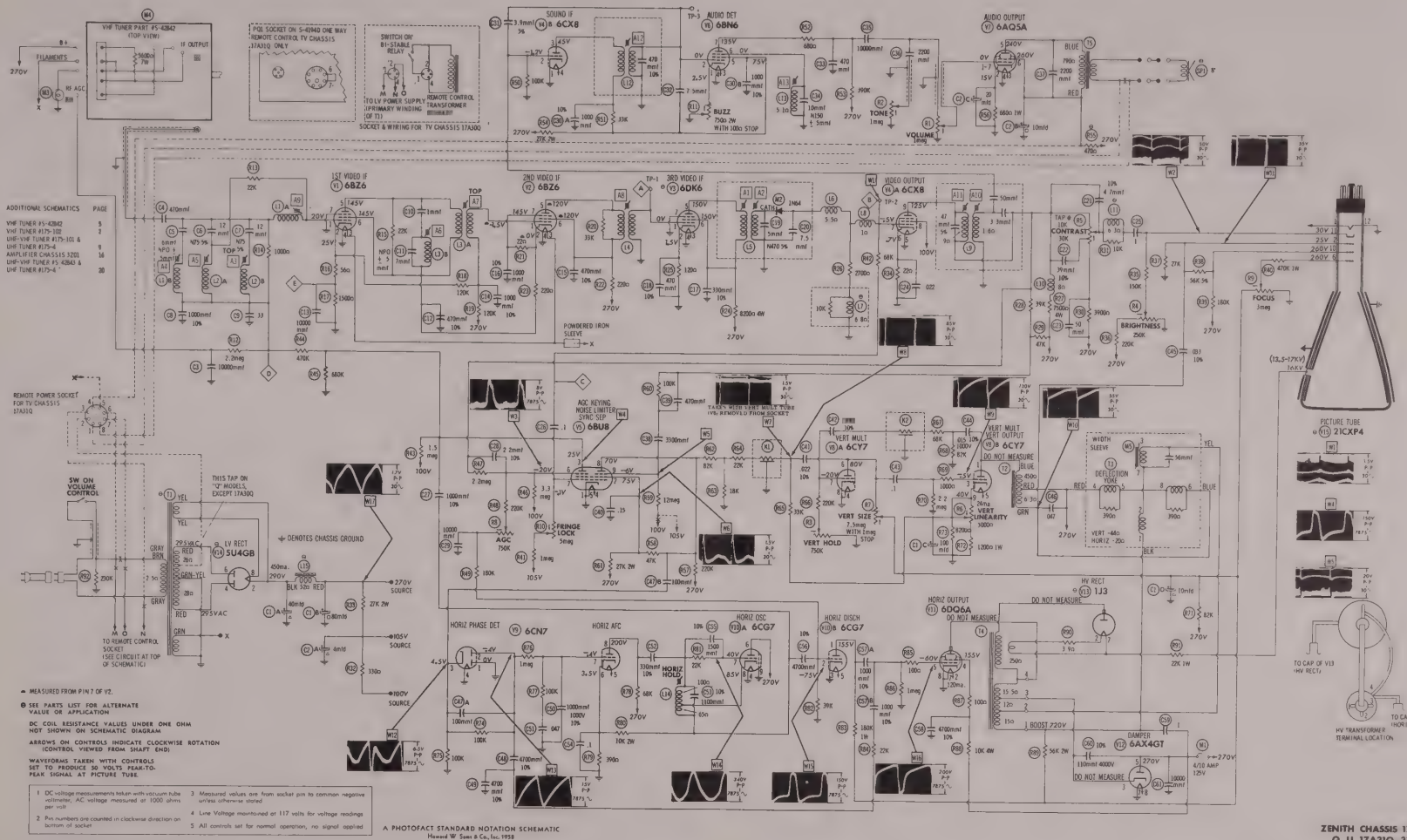
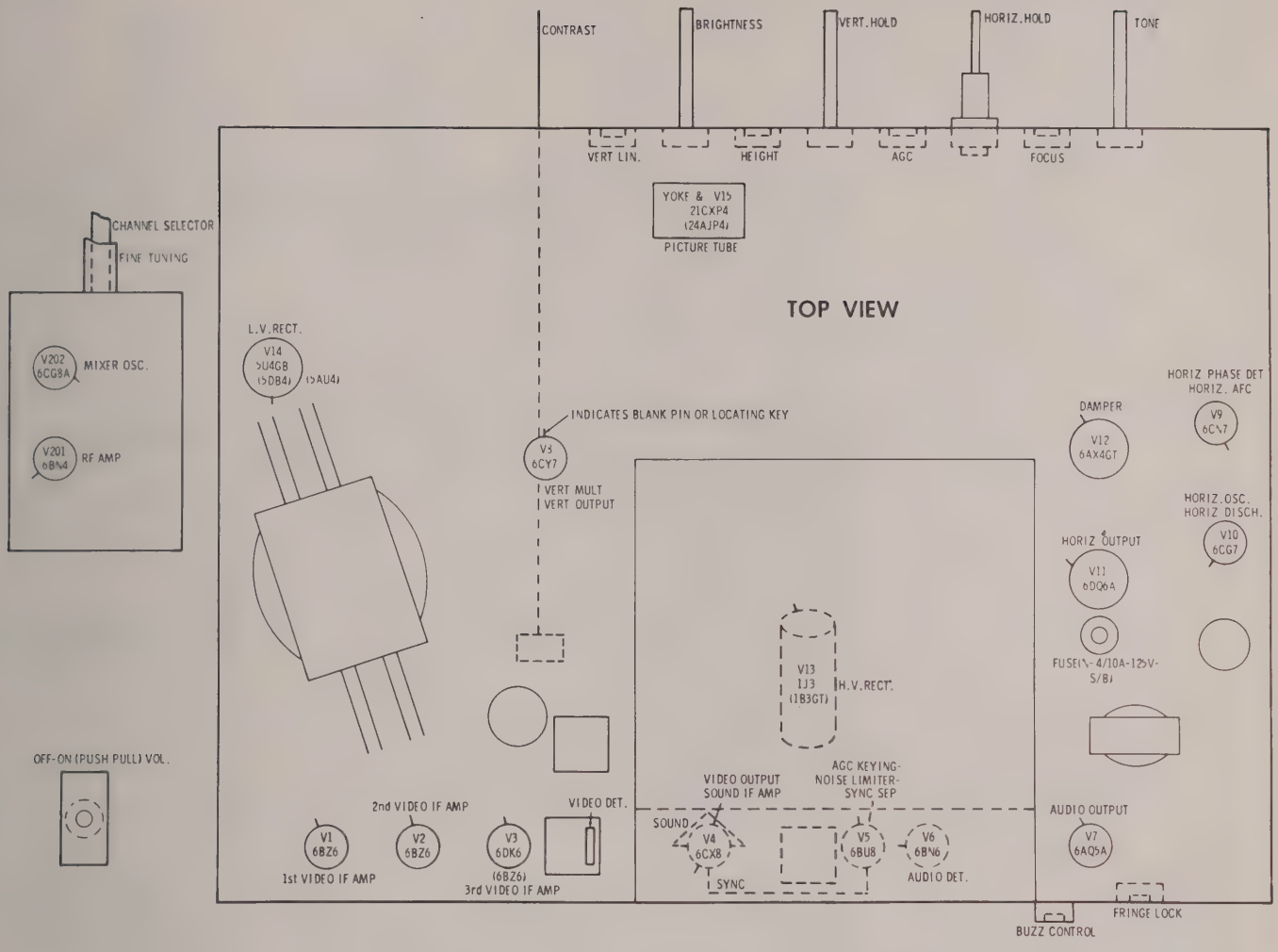
SET 408 FOLDER 4


VHF TUNER PART #5-42842 (TOP VIEW)
FILAMENTS
270V
IF OUTPUT
RF AGC
POS. SOCKET ON 5-41940 ONE WAY REMOTE CONTROL TV CHASSIS 17A31Q ONLY
SWITCH ON B1+ STABLE RELAY
M N O
TO LV POWER SUPPLY (PRIMARY WINDING OF T1)
REMOTE CONTROL TRANSFORMER
SOCKET & WIRING FOR TV CHASSIS 17A30Q
SOUND IF
V4 6CX8
AUDIO DET
V6 6BN6
AUDIO OUTPUT
V7 6AQ5A
BUZZ 750n 2W WITH 100n STOP
TONE 1meg
VOLUME 1meg
BLUE
RED
1ST VIDEO IF
V1 6BZ6
2ND VIDEO IF
V2 6BZ6
3RD VIDEO IF
V3 6DK6
VIDEO OUTPUT
V9A 6CX8
TOP
POWDERED IRON SLEEVE
CONTRAST 10K
BRIGHTNESS 250K
FOCUS 3meg
(13.5-17KV) 16KV
PICTURE TUBE
V15 21CXP4
ADDITIONAL SCHEMATICS PAGE
VHF TUNER #5-42842 5
VHF TUNER #175-102 2
UHF-VHF TUNER #175-101 & UHF TUNER #175-4 9
AMPLIFIER CHASSIS 3Z01 16
UHF-VHF TUNER #5-42843 & UHF TUNER #175-4 20
REMOTE POWER SOCKET FOR TV CHASSIS 17A31Q
SW ON VOLUME CONTROL
THIS TAP ON "U" MODELS, EXCEPT 17A30Q
LV RECT V14 5U4GB
295VAC
DENOTES CHASSIS GROUND
TO REMOTE CONTROL SOCKET (SEE CIRCUIT AT TOP OF SCHEMATIC)
270V SOURCE
105V SOURCE
100V SOURCE
AGC KEYING NOISE LIMITER SYNC SEP
V5 6BU8
TAKEN WITH TEST TUBE (V5) REMOVED FROM SOCKET
VERT MULT V8 6CY7
VERT SIZE 7.5meg WITH 1meg STOP
VERT HOLD 750K
VERT MULT VERT OUTPUT V10 6CY7
DO NOT MEASURE
VERT LINEARITY 3000n
DEFLECTION YOKE
VERT 44n HORIZ 22n
WIDTH SLEEVE
AGC 750K
FRINGE LOCK 5meg
HORIZ PHASE DET V5 6CN7
HORIZ AFC
HORIZ OSC V10A 6CG7
HORIZ DISCH V10B 6CG7
HORIZ HOLD
HORIZ OUTPUT V11 6DQ6A
HV RECT V13 1J3
BOOST 720V
DAMPER V12 6AX4GT
4/10 AMP 10V
TO CAP OF V13 (HV RECT)
TO CAP OF V11 (HORIZ OUTPUT)
HV TRANSFORMER TERMINAL LOCATION
MEASURED FROM PIN 7 OF V2.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured on 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ZENITH CHASSIS 17A30,
Q, U, 17A31Q, 3Z01

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

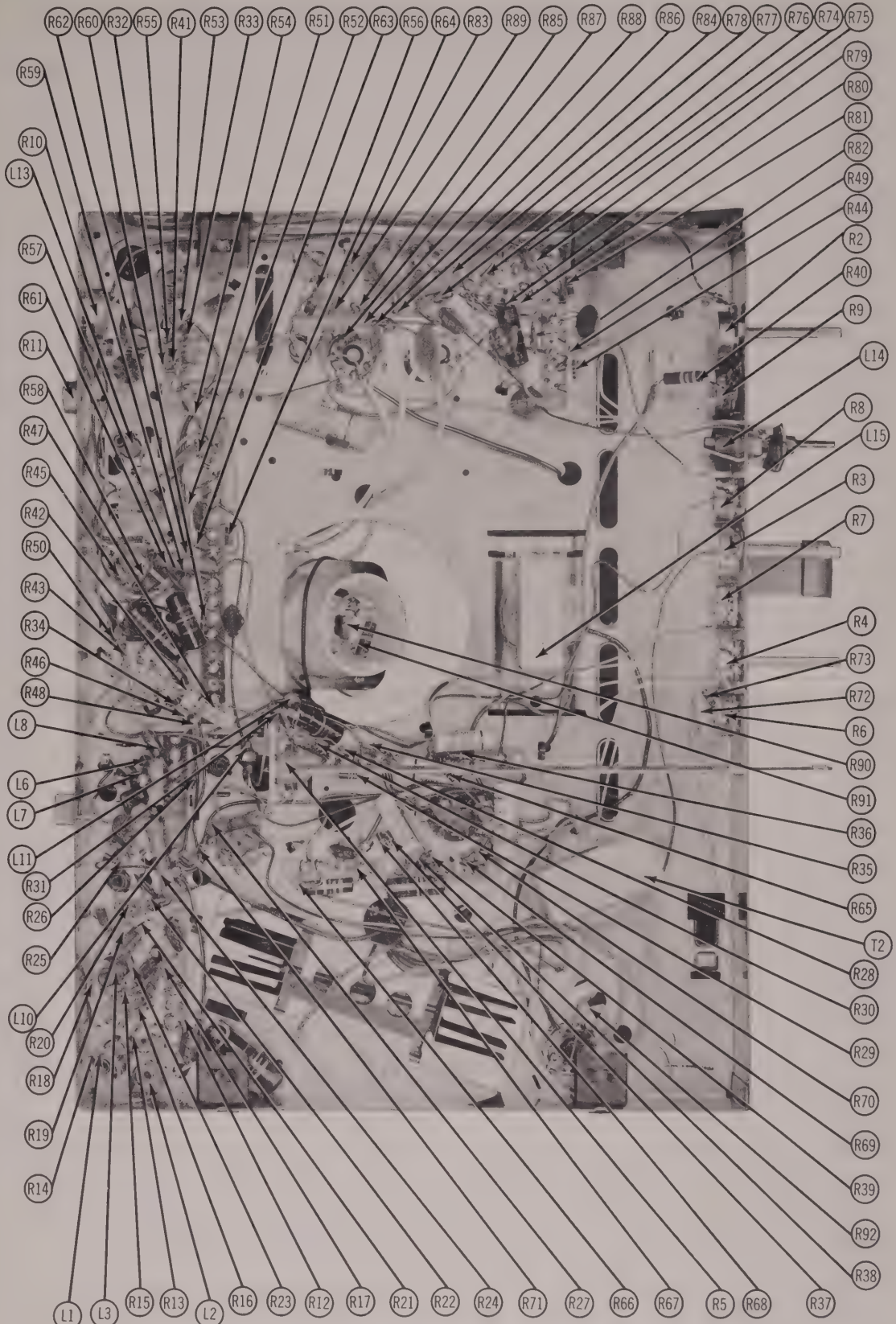
The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound V14

SWEEP FAILURE
No raster, has sound Fuse (M1), V9, V10, V11, V12, V13, V15
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, V14
Vert. off freq. V8
Horiz. off freq. V9, V10

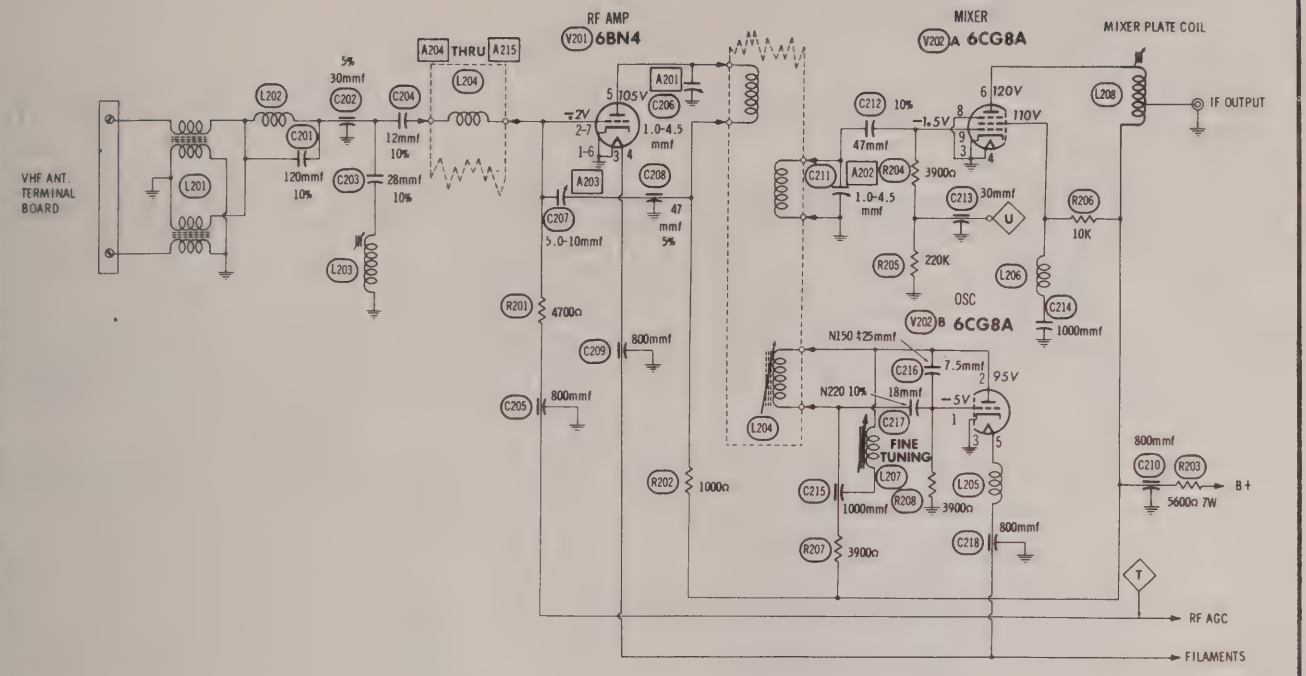
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M2), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5, V9
No vert. or horiz. sync V5



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

ZENITH CHASSIS 17A30,
Q, U, 17A31Q, 3Z01



A PHOTO ACT STANDARD NOTATION SCHEMATIC

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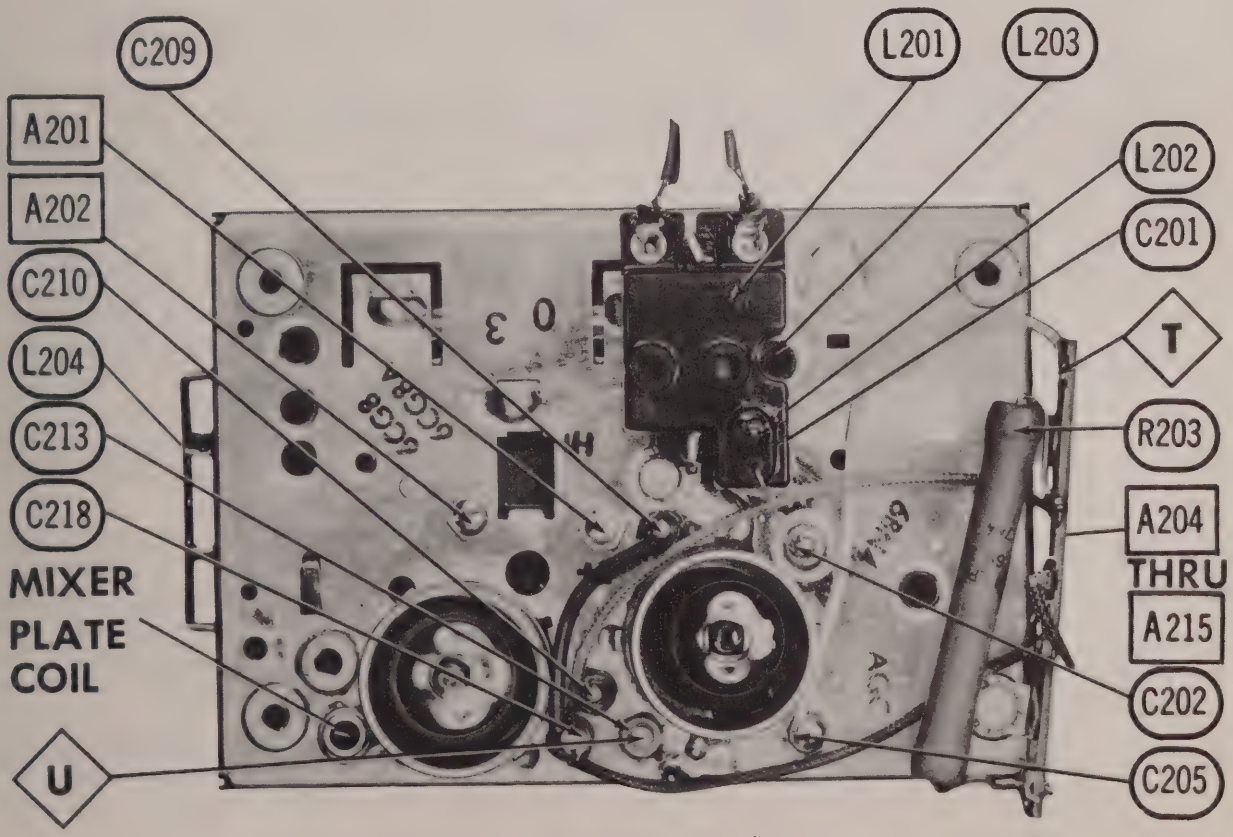
VHF TUNER #S-42842



TUNER #S-42842 - TOP VIEW

SET 408 FOLDER 4

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS FOR TUNERS #S-42842, S-42893

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated.
Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

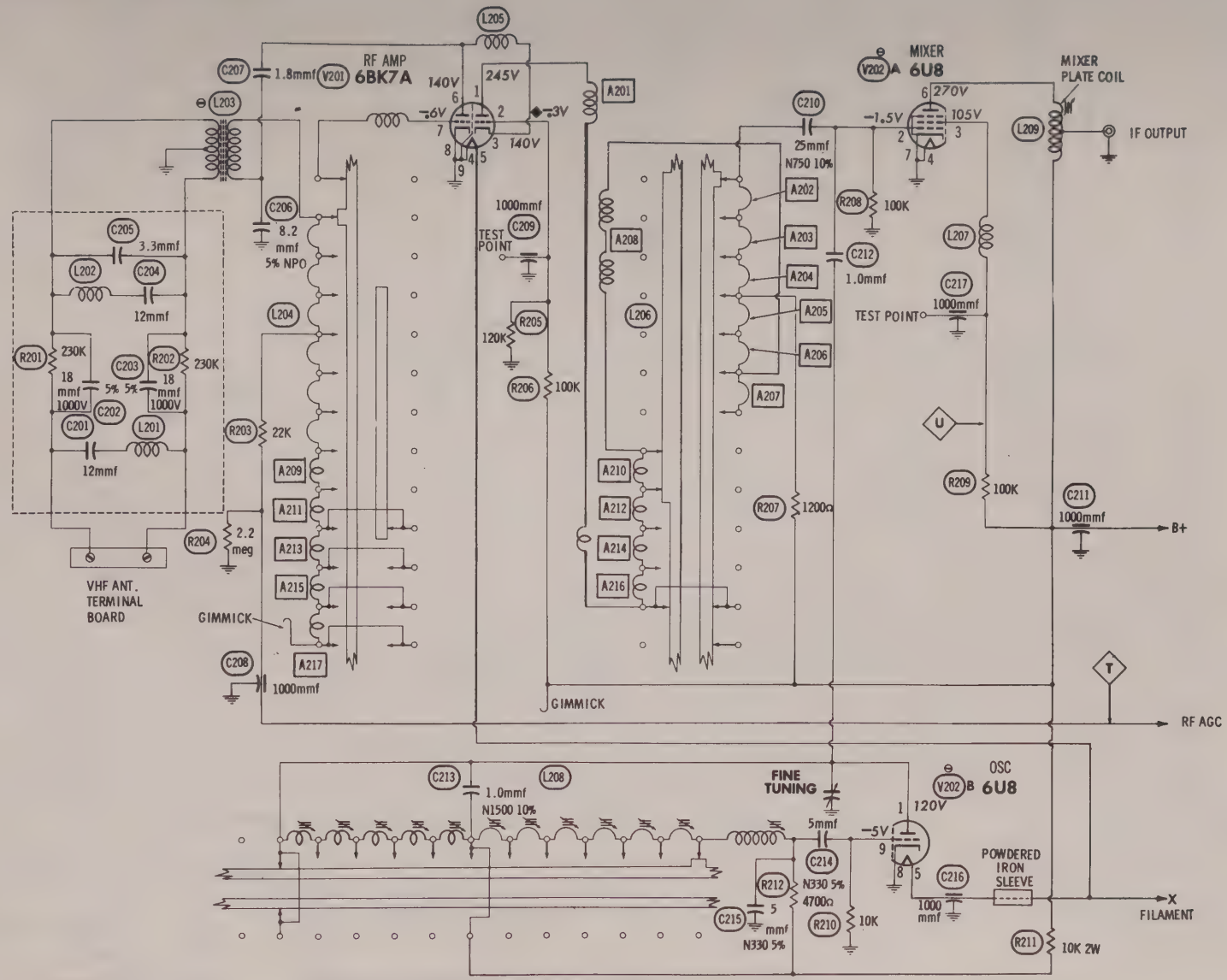
Connect negative lead of 0-15 volt variable bias supply to point Ⓣ. Positive to chassis. Adjust bias for 2.5 volts at point Ⓣ.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 203	Across antenna terminals matching network (Fig. 203).	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓣ. Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

UHF ALIGNMENT FOR TUNER #175-4

Alignment of the UHF tuner should not be attempted unless proper test equipment is available. Switch the receiver to the UHF position.
Connect 2 volts bias to the IF AGC line and adjust the sweep generator output to provide 3 volts peak to peak on the scope in the following steps.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Fig. 203	Across UHF antenna terminals thru matching network (Fig. 203).	713MC	711.25MC	54	Vert. Amp. thru 10K across video detector load.	A216, A217, A218	Tuner rocker arm should be in a horizontal position. If necessary, loosen the set screw and adjust the tuner so that rocker arm is horizontal when the channel selector is set at channel 54. Do not adjust A216 unless oscillator calibration is off more than 3 channels. If necessary, adjust A216 to place video marker at 50% on response curve as in Fig. 202. The image (weaker response) will appear also. The response toward the counter clockwise position of A216 is the proper response. Adjust A217 and A218 for maximum amplitude of response similar to Fig. 202.
4.	"	"	473MC	471.25MC	14	"		Check for response similar to Fig. 202. If the oscillator is off more than 3 channels, adjust the oscillator travel (oscillator, mixer and antenna travel adjustments are the 3 round screws on top of the UHF tuner) adjustment to scale. Care must be used in making this adjustment so as not to move the rocker arm out of its bearing. Set the mixer and antenna travel adjustments for maximum response on scope.
5.	"	"	887MC	885.25MC	83	"	A219, A220, A221	Adjust A219 to place marker at 50% as in Fig. 202. Adjust A220 and A221 for maximum gain and symmetry similar to Fig. 202.



◆ MEASURED FROM PIN 3 OF V201.

CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

VHF TUNER #175-102

ZENITH CHASSIS 17A30, Q, U, 17A31Q, 3Z01

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS FOR TUNERS #175-101, 175-102

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Set the fine tuning to the center of its range by turning fine tuning shaft until the small index hole in the drive cam is directly over the small hole just below the channel 13 oscillator adjustment screw. Starting with the highest channel operating in the area, adjust the appropriate oscillator adjustment screw for best picture and sound for each channel available.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2 volt bias supply to point (T). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Matching Network	Across antenna terminals .	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point (U). Low side to chassis.	A201	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
2.	"	"	207MC	205.25MC 209.75MC	12	"	A202	"
3.	"	"	201MC	199.25MC 203.75MC	11	"	A203	"
4.	"	"	195MC	193.25MC 197.75MC	10	"	A204	"
5.	"	"	189MC	187.25MC 191.75MC	9	"	A205	"
6.	"	"	183MC	181.25MC 185.75MC	8	"	A206	"
7.	"	"	177MC	175.25MC 179.75MC	7	"	A207	"
8.	"	"	85MC	83.25MC 87.75MC	6	"	A208, A209	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown. Adjust first coil for proper marker position and second coil for maximum gain and symmetry.
9.	"	"	79MC	77.25MC 81.75MC	5	"	A210, A211	"
10.	"	"	69MC	67.25MC 71.75MC	4	"	A212, A213	"
11.	"	"	63MC	61.25MC 65.75MC	3	"	A214, A215	"
12.	"	"	57MC	55.25MC 59.75MC	2	"	A216, A217	"

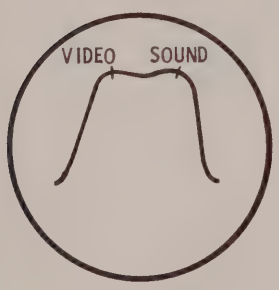


FIG. 201

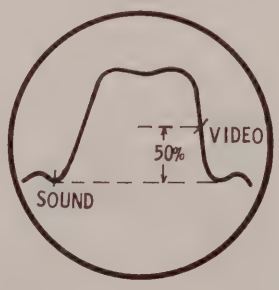
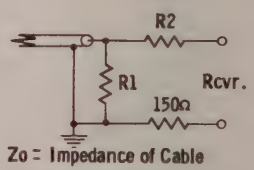


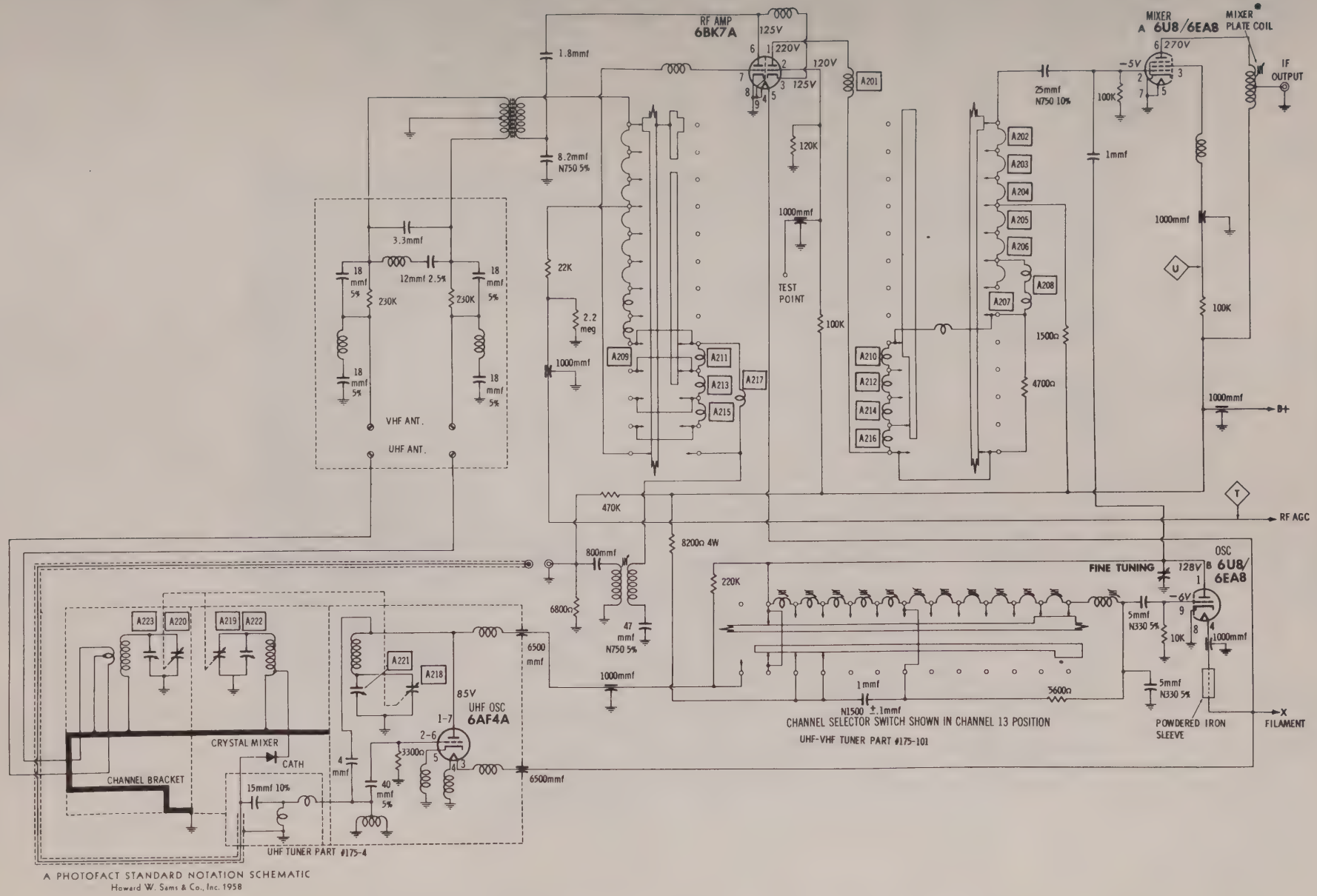
FIG. 202



Zo = Impedance of Cable

Zo	R1	R2
50Ω	50Ω	120Ω
75Ω	82Ω	110Ω
92Ω	110Ω	110Ω

FIG. 203



UHF-VHF TUNER #175-101 & UHF TUNER #175-4

ZENITH CHASSIS 17A30, 17A31Q, 17A32Q

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	470mmf	High side to point (A). Low side to chassis.	44MC (10MC Swp)	39.75MC 41.25MC 45.75MC	Between any two channels	Vert. Amp. thru 10K to point (B). Low side to chassis. (across video det. load).	A1, A2	Set sweep generator output to produce 3 volts peak to peak on scope. Adjust A1 and A2 alternately for maximum gain and symmetry with the 45.75MC positioned as shown in Fig. 1. The 39.75MC marker can fall within ± .5MC of the specified frequency. If the desired response cannot be obtained, check to see that the cores are entering their respective windings from opposite ends of the coils.
2.	Direct	High side to ungrounded tube shield floating over mixer-oscillator tube (V202). Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A3, A4, A5, A6	Connect a clip lead from point (C) to chassis. Connect a clip lead from point (D) to point (E). Use high scope gain and adjust A3 thru A6 for MINIMUM marker amplitudes as in Fig. 2. A3 controls 39.75MC marker, A4 controls 41.25MC marker and A5 and A6 controls 47.25MC marker.
3.	"	"	"	41.25MC 42.75MC 45.0MC 45.75MC	"	"	A7, A8, A9 and Mixer Plate Coil	Disconnect clip lead from point (E) and connect to chassis. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A7 affects low side of curve and A8 affects high side.

SOUND IF ALIGNMENT

Connect an adjustable attenuator between the antenna and the receiver terminals. Tune in a modulated TV signal and adjust the attenuator until the signal is below the limiting level of the 6BN6 (V6) as evidenced by a hiss similar to super-regeneration in the sound. Adjust A10, A11, A12 and A13 for maximum sound and best quality. Adjust the buzz control (R11) for MINIMUM buzz. If the hiss disappears during sound alignment, further reduce the signal until the hiss returns.

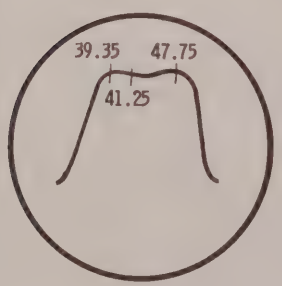


FIG.1

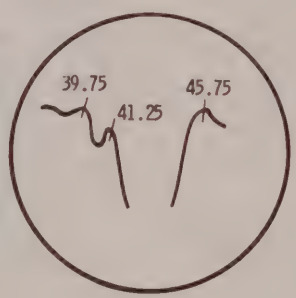


FIG.2

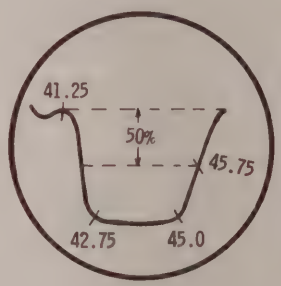
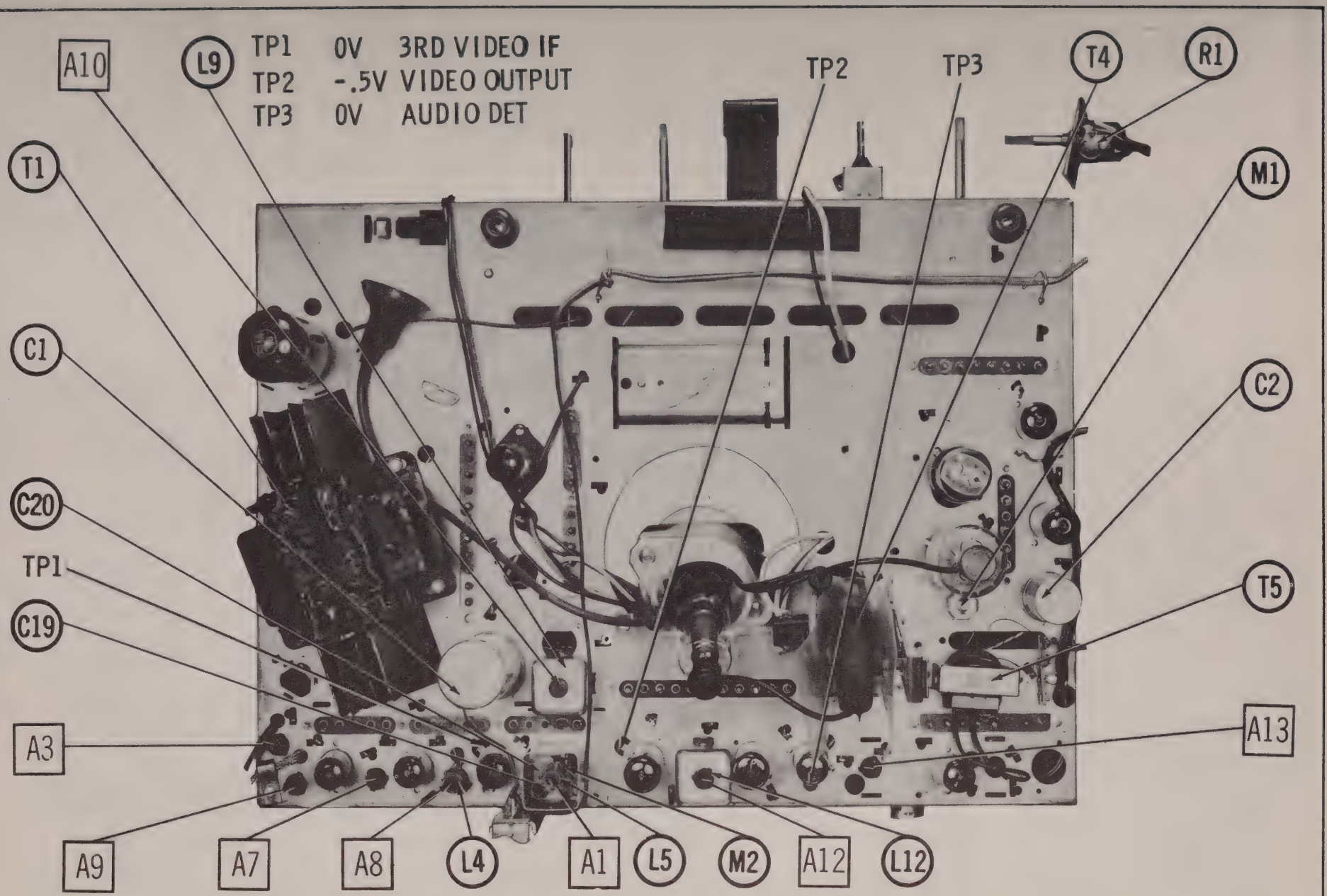


FIG.3

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGES 6 & 8.



CHASSIS TOP VIEW

ZENITH CHASSIS 17A30,
Q, U, 17A31Q, 3Z01

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	6BZ6	
V2	2nd. Video IF Amp	6BZ6	
V3	3rd Video IF Amp.	6DK6	6BZ6 *
V4	Video Output-Sound IF Amp.	6CX8	
V5	AGC Keying-Noise Limiter-Sync Sep.	6BU8	
V6	Audio Det	6BN6	
V7	Audio Output	6AQ5A	

ITEM No	USE	TYPE	NOTES
V8	Vert. Mult. -Vert. Output	6CY7	
V9	Horiz. Phase Det.-Horiz. AFC	6CN7	
V10	Horiz. Osc.-Horiz. Disch	6CG7	
V11	Horiz. Output	6DQ6A	
V12	Damper	6AX4GT	
V13	HV Rectifier	1J3	1B3GT *
V14	LV Rectifier	1U4GB	5DB4 or 5AU4*

* Alternate.

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	ZENITH PART No	GENERAL ELECTRIC PART No	RCA PART No.	SYLVANIA PART No.	
V15	21CXP4 24AJP4			21CXP4 ① 24AJP4 ①	① "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	440	400	22-2971	AFH4-113-50	C0890	FP333. 2		Q-460	R2584 *
B	280	400			CBR1250	TCH		MTD-4520	
C	100	50							
D	10	475							
C2A	44	350	22-2744	AFH3-180	C1445	FP345. 2		T-510	TVL-3806. 6
B	80	400							
C	20	25							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.		
C3	10000		22-3	BPD-01	DD-103	BYA10H1	DC511	5HK-S1		
C4	470		22-6	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47		
C5	6		22-3231							NPO ± .5mmf
C6	12		22-3279							N75 5%
C7	12		22-3279							N75 5%
C8	1000		22-17							1 0%
C9	.33	200	22-2159	P288N-33			GEM-3033			
C10	1		22-1763	NPO-S1 1.0	TCZ-1				5TCCB-V1	
C11	7		22-3213							NPO ± .5mmf
C12	470		22-16		MD-471					10%
C13	10000		22-3	BPD-01	DD-103	BYA10H1	DC511	5HK-S1		
C14	1000		22-17							10%
C15	470		22-16		MD-471					10%
C16	1000		22-17							10%
C17	330		22-2966	1469-00033	MD-331	5HS733		MS-333		10%
C18	470		22-16		MD-471					10%
C19	5		22-2990							N470 5%
C20	7.5		22-2742							
C21	6.7		22-3041	NPO-S1 6.7	TCZ-4R7	CTA5V47C	ZT-5547	5TCCB-V47		10%
C22	39		22-3042	NPO-S1 39	D6-390	CTA5Q39C		5TCC-Q39		10%
C23	50		22-3460		D6-500	LT6Q5	UC-546	5TCC-Q5		
C24	.022	200	22-1781	P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22		
C25	.1	200	22-1777	P288N-33	DF-104	CUB2P1	GEM-201	2TM-P1		
C26	.1	200	22-1777	P288N-33	DF-104	CUB2P1	GEM-201	2TM-P1		
C27	1000		22-17							10%
C28	3.3		22-3233	NPO-S1 2.2	TCZ-2R2	CTA5V32C		5TCCB-V22		10%
C29	10000		22-3	BPD-01	DD-103	BYA10H1	DC511	5HK-S1		
C30A	1000		22-21							10%
B	1000									10%
C31	3.9		22-2221							5%
C32	7.5		22-2742							
C33	470		22-6	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47		
C34	10		22-2721							N150 ± .5mmf
C35	10000		22-3	BPD-01	DD-103	BYA10H1	DC511	5HK-S1		
C36	2300		22-5	BPD-0022	DD-223	BYA10D23	UC-5223	5HK-D22		
C37	2200		22-3	BPD-0022	DD-223	BYA10D22	UC-5222	5HK-D22		
C38	3300		22-11	BPD-0033	DD-333	BYA10D33	UC-5333	5HK-D33		
C39	470		22-6	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47		
C40	.15	200	22-2147	P388N-15		CUB2P15	GEM-2015	2TM-P15		
C41	.022	400	22-2621				GEM-16268			10%
C42	.0068	400	22-2606				GEM-16268			10%
C43	.1	400	22-2061	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1		
C44	.013	1000	22-3040							10%
C45	.033	400	22-2626							10%
C46	.047	200	22-1778	P388N-047	DF-503	CUB2S47	GEM-4147	2TM-S47		
C47A	100		22-23	BPD-0001	DD-101	L10T1	UC-531	5GA-T1		
B	100			BPD-0001	DD-101	L10T1	UC-531	5GA-T1		
C48	4700		22-14							10%
C49	4700		22-14							10%
C50	1000	1000	22-17							10%
C51	.047	200	22-1778	P388N-047	DF-503	CUB2S47	GEM-4147	2TM-S47		
C52	330		22-2967	1469-00033	MD-331	5HS733		MS-333		10%
C53	1000		22-2959	1464-0001		1R5D1		MS-311		10%
C54	.1	200	22-1777	P388N-1	DF-104	CUB2P1	GEM-201	2TM-P1		
C55	1500		22-12							10%
C56	4700		22-14							10%
C57A	1000		22-21							10%
B	1000									10%
C58	4700		22-14							10%
C59	.1	600	22-1841	P588N-1	DF-104	CUB6P1	GEM-601	6TM-P1		
C60	110	4000	22-2694							10%
C61	10000		22-3	BPD-01	DD-103	BYA10H1	DC511	5HK-S1		

PARTS LIST AND DESCRIPTIONS

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	63-4006				PP16A	Volume
B	Switch						Not Req.	
R2A	1meg	½	63-3616	B-70	A47-1meg-Z	QJ1-137	U53	Tone
B	Shaft			Not Req.	RS6-3	Not Req.	Not Req.	
R3A	750K	½	63-3299	B-86	A47-750K-S	QJ1-136	U54	Vert. Hold
B	Shaft			Not Req.	RS6-3	Not Req.	Not Req.	
R4A	250K	½	63-3572	B-80	A47-250K-S	QJ1-130	U46	Brightness
B	Shaft			Not Req.	RS6-3	Not Req.	Not Req.	
R5	30K	½	63-4066					Contrast, Tap ⑥ 10K
R6A	3000Ω	½	63-3588	AB-8	A47-3000-S	Bil-113	PTA35L	Vert. Lin.
B	Shaft			AK-1	FK3-1/4	SK3	Not Req.	
R7A	7.5meg	½	63-4068	AB-89 †	A47-7.5meg -S †	Bil-142 †	PTA75S	Vert. Size With 1meg Stop
B	Shaft			AK-1	FK3-1/4	SK3	Not Req.	
R8A	750K	½	63-4067	AB-66	A47-750K-S	Bil-136	PTA75L	AGC
B	Shaft			AK-1	FK3-1/4	SK2	Not Req.	
R9A	3meg	½	63-4036	AB-4	A47-3meg-S	Bil-140	TA3L	Focus
B	Shaft			AK-1	FK3-1/4	SK3	Not Req.	
R10A	5meg	½	63-4012			Bil-141		Fringe Lock
B	Shaft					TM2-1C1		
R11	750Ω	2(WW)	63-3284		39-800-50			Buzz With 100Ω Stop

† Use 1meg resistor in series with right hand terminal.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R12	2.2meg		63-1926	
R13	22K		63-3648	
R14	1000Ω		63-1786	
R15	33K		63-3646	
R16	56Ω		63-1733	
R17	1500Ω		63-1793	
R18	130K		63-1873	
R19	130K		63-1873	
R20	33K		63-4008	
R21	22Ω		63-1716	
R22	220Ω		63-1758	
R23	220Ω		63-1758	
R24	8300Ω	4	63-3602	
R25	130Ω		63-1747	
R26	2700Ω		63-1803	
R27	7500Ω	4	63-4055	
R28	39K		63-1853	
R29	47K		63-1855	
R30	3900Ω		63-1810	
R31	10K		63-3283	
R32	330Ω		63-1766	
R33	27K	2	63-947	
R34	22Ω		63-1715	
R35	150K		63-1876	
R36	220K		63-1884	
R37	47K		63-1855	
R38	56K 5%		63-1856	
R39	150K		63-1880	
R40	470K	1	63-3649	
R41	1meg		63-1911	
R42	68K		63-1862	
R43	1.5meg		63-1918	
R44	470K		63-1898	
R45	680K		63-1904	
R46	3.3meg		63-1923	
R47	2.2meg		63-1926	
R48	220K		63-1883	
R49	180K		63-1880	
R50	100K		63-1870	
R51	33K		63-1848	
R52	680Ω		63-1779	
R53	330K		63-1894	
R54	27K	2	63-947	
R55	470Ω		63-1771	Note 1
R56	680Ω	1	63-2290	
R57	220K		63-1883	
R58	47K		63-1855	
R59	1.2meg		63-1927	
R60	100K		63-1870	
R61	27K	2	63-947	
R62	82K		63-1906	
R63	16K		63-1838	
R64	22K		63-1842	
R65	33K		63-1848	
R66	220K		63-1883	
R67	68K		63-1862	
R68	82K		63-1866	
R69	1000Ω		63-1788	
R70	2.2meg		63-1925	
R71	82K		63-1866	
R72	1200Ω	1	63-1976	
R73	8200Ω		63-1924	
R74	180K		63-1869	
R75	100K		63-1869	
R76	1meg		63-1911	
R77	180K		63-1869	
R78	68K		63-1862	
R79	3900Ω		63-1788	
R80	10K	2	63-3145	
R81	22K		63-1842	
R82	39K		63-1852	
R83	180K	1	63-2313	
R84	22K		63-1841	
R85	100Ω		63-1744	
R86	1meg		63-1911	
R87	100Ω		63-1744	
R88	10K	4	63-3623	
R89	56K	2	63-3141	
R90	3.9Ω		63-4063	
R91	22K	1	63-1056	
R92	220K		63-3607	

Note 1. Ch. 17A31Q uses 330Ω 2W in this application (Part #63-1622).

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V	580VCT	5V	96-1555 ①						
	② 1.6A	② .280A	③ 3A							
	SEC. 3	SEC. 4	SEC. 5							
	6.3V									
	② 7.5A									

① Part #95-1562 used in Ch. 17Q31.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		ZENITH PART No	Halldorson PART No.	Merit PART No	Ram PART No.	Stancor PART No.	Thordarson PART No	Triad PART No	
T2	Vert. Output	95-1552				A-8113 ①			
T3A	Yoke-Horiz. (13MH)	95-1554	DF-806 ②	MDF-91 ②	Y80F12/47 ②	DY-13A ②	Y-39 ②	Y-40 & NW24 ④	
B	(90°)-Vert. (38MH)								
M6	Rear Cover & Centering Device	S-23237						YC-1 & CL-1	
T4	Horiz. Output	S-41906			X137 * ⑤	HO-27 * ⑤	FLY-118* ⑤	D-130 *	

① Connect sa autoformer.
② Use original rear cover and centering device, width sleeve &horizontal damping network, if necessary. Cut and form a piece of .010 gauge fish paper inside the yoke itself and support with an acetate cement to provide an insulation between the width sleeve and the yoke proper.
③ Connect yoke terminal #2 to terminal #2 of T4 ; yoke terminal #7 to terminal #1 of T4. Cut and tape orange lead.
④ Use original width sleeve.
⑤ Use original mounting bracket.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	4		4	4	4	4	4
	3		3	3	3	3	3
	2		2	2	2	2	2
	1		1	1	1	1	1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	10.5K	3-4Ω	95-1569	Z1117	A-2932	AU-808	A-3879	24852	S-17X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	49-780 ①	6A2E	① Used in Models A2325E, R, Y, A2345E, R, A2346E, R, A2352R, A3004, K, R
	5"	PM	3-4Ω	49-781 ②	5A2AI	② Used in Models A2322R, A3000E, R, A3001E, A3001R
	8"	PM	6-8Ω	49-827 ③	8A2LZ8.4	③ Two used in Models A2673E, A2673R
	10"	PM	3-4Ω	49-764 ④	10A8A	④ Used in Models A2352E, A2362R
				49-843 ⑤		⑤ Two used in Models A2353E, R, A3007R, A3009E, A3009R
				49-834 ⑥		⑥ Used in Models A3006E, H, R
				49-818 ⑦		⑦ Used in Models A2346E, R, A2352R
				8-23529 ⑧		⑧ Two used in Models A2352E, R

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ZENITH PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1A	1st. Video IF	8-43442					
B	41.25MC Trap						
L2A	47.25MC Trap	8-41883					
B	39.75MC Trap						
L3A	2nd. Video IF	8-43443					
B	47.25MC Trap						
L4	3rd. Video IF	8-41891	17-4523 *	TV-130 *	6234*	VF-3 *	
L5	4th. Video IF	8-41898					Includes L6 & 81 Microhenries
L6	RF Choke	8-41879	19-3078	TV-185	6173		205 Microhenries, wound on a 10K resistor, Note 1
L7	Shunt Peaking Coil	8-43219	19-4301 ±	TV-197 ±	6154 ±		6.7 Microhenries
L8	RF Choke	8-41888	19-1004	BC-585	6610		250 Microhenries
L8A	4.5MC Trap	8-43126		TV-130			
B	1st. Sound IF						
L10	Shunt Peaking Coil	8-16011	19-3250	TV-185	6181	VP-6	250 Microhenries
L9A	Series Peaking Coil	8-41890	19-3150	TV-196	6130	VP-5	185 Microhenries, Note 2
L12	2nd. Sound IF	8-41899	17-1021 ±	TV-149			
L13	Quadrature Coil	8-19020	20-1005 *	TV-121	1480 *		

* Drill new mounting hole. ± Enlarge spade bolt mounting holes. A Parallel with a 10K resistor.
Note 1. Some versions may use Part #6-19380 in this application.
Note 2. Some versions may use Part #6-43219 (205 Microhenries wound on a 10K resistor) in this application.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No	
L14	165Ω*		8-19763	19-1577	TV-169	6324		HH-8	* Tapped @ 65Ω

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 (V)	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
L15	.380A	62Ω	1.8 Hy.	95-1553	CS037 ①	C-2993①		CS336 ①	26C44	C-25X
	.290A	52Ω	1.4 Hy.	95-1559 ②	CS037 ①	C-2996 ①		C-2326 ①	26C44	C-25X

① Drill new mounting hole. ② Used in Ch. 17A31Q.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ZENITH PART No.	REPLACEMENT DATA
K1	Vert. Integrator		87-6	Sprague V-15
K2	Vert. Feedback		87-4	Sprague V-14

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	N	4/10A 125V 3/B	136-37	62-19	333, 400 (N-4/10A-125V-3/B)	348009	N 4/10	HN 3/10 to 1/2

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ZENITH PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N64	103-33	1N60	1N60	Video Det. (Pigtail)

ZENITH CHASSIS 17A30, Q, U, 17A31Q, 32Q01

FOLDER 4

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Lamp		#39
M4	Tuner	S-42842	VHF Ch. 17A30, Q, 17A31Q
	Tuner	175-102	VHF Ch. 17A30
	Tuner	S-42843	UHF-VHF Ch. 17A30U
	Tuner	175-101	UHF-VHF Ch. 17A30U
	Tuner	175-4	UHF Ch. 17A30U
M5	Width Sleeve		
M6	Centering Device	S-23237	Includes yoke rear cover

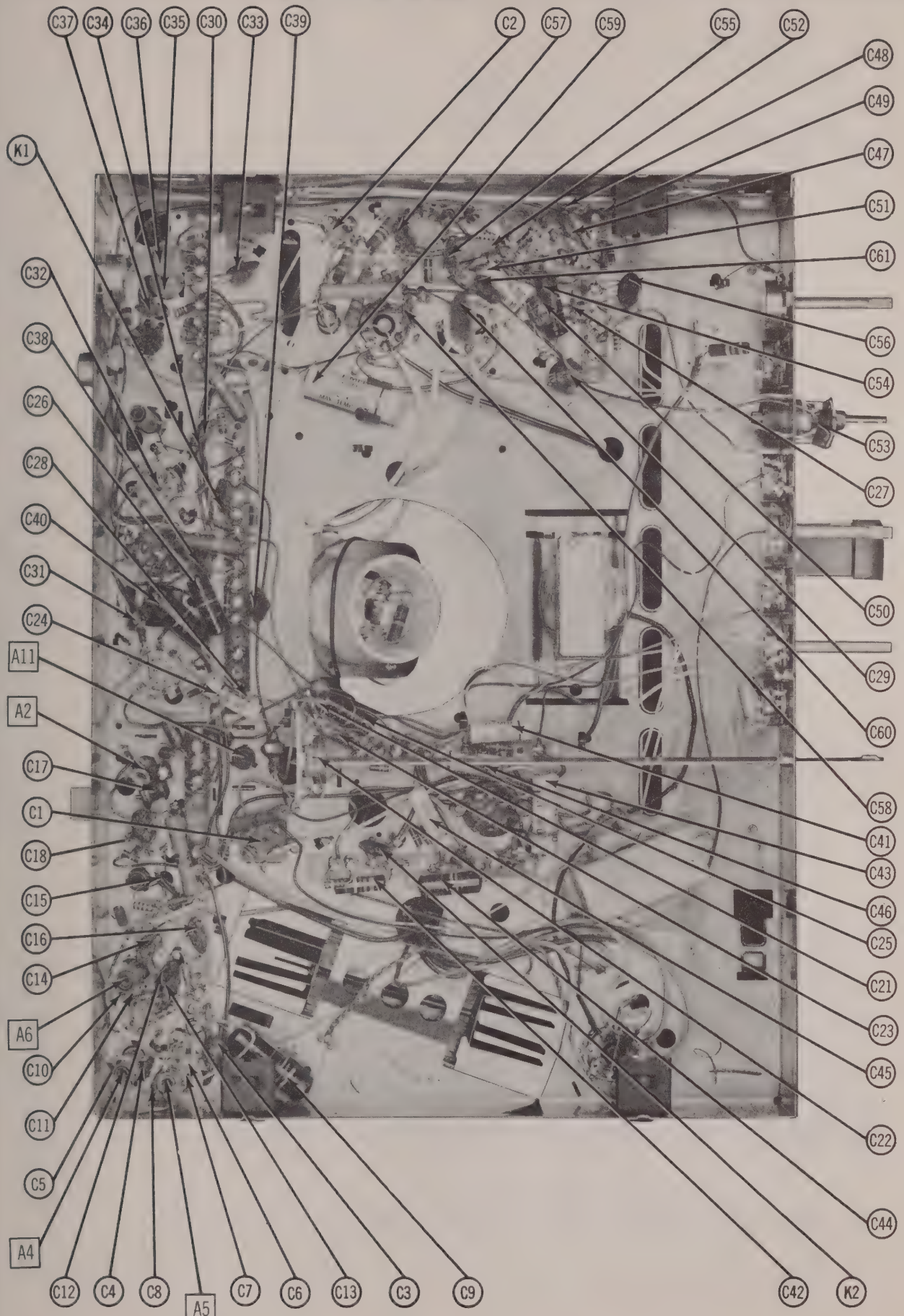
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

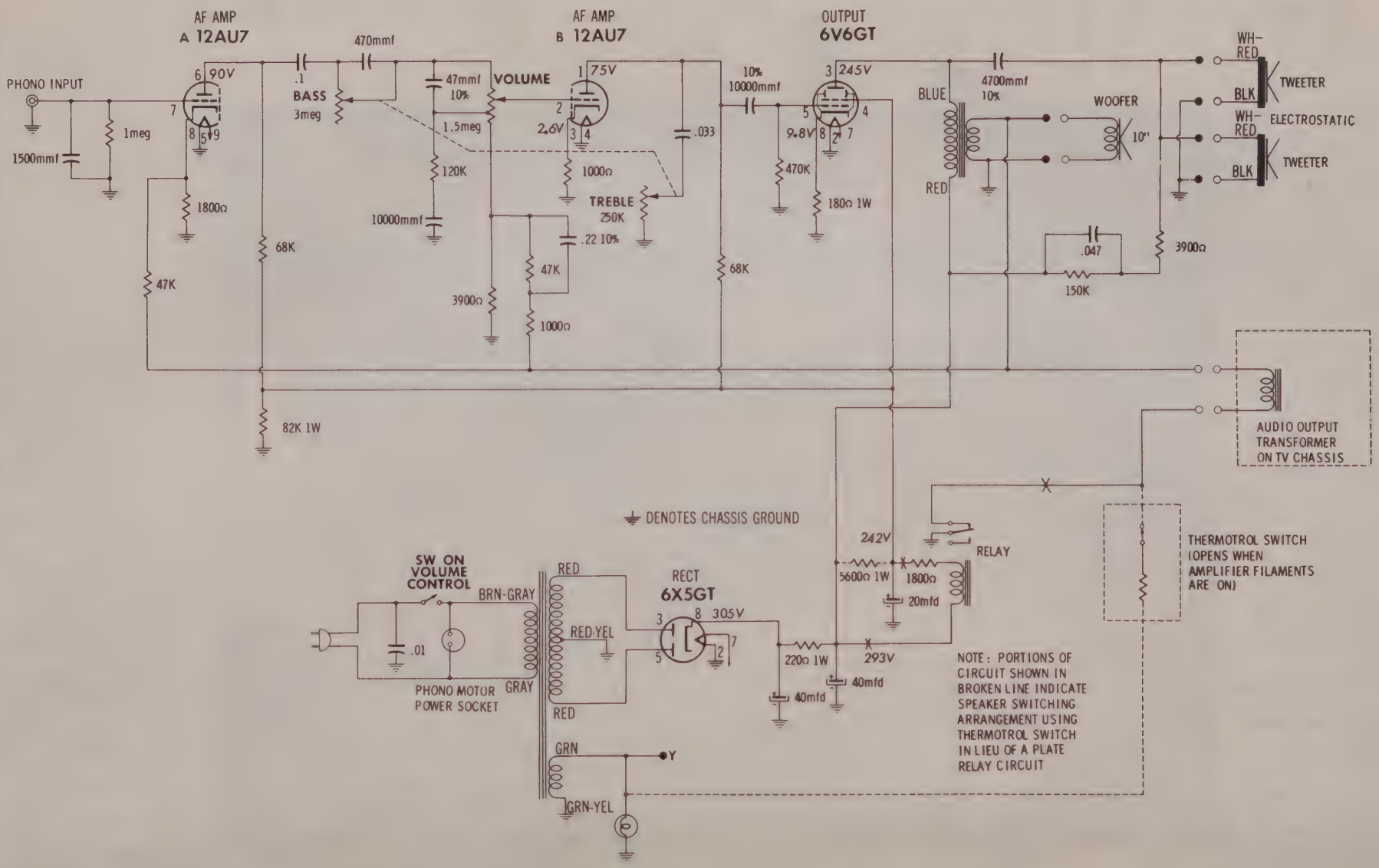
NAME	PART NO.	DESCRIPTION
Safety Glass	192-239	Models A2223R, RU, E, EU, Y, YU, A2245, E, EU, R, RU, U, A2246E, EU, R, RU, A2252R, RU, A2253E, EU, R, RU, A2282E, EU, R, RU
Safety Glass	192-238	Models A2221R, RU
Safety Glass	192-244	Models A2673E, EU, R, RU
Safety Glass	192-242	Models A3000E, R, A3001E, R, A3004, E, R, A3006E, H, R, A3007R, A3009E, H
Knob	46-1834	Volume, Models A2223R, E, Y, A2245, E, R, A2246E, R, A2252R, A2253E, R, A2282E, R, A2673E, R
Knob	46-1703	Volume, Model A2221R
Knob	S-43493	Volume, Models A3000E, R, A3001E, R, A3004, R, A3006E, R, A3007R, A3009E, H
Knob	46-1806	Volume, Model A3006H
Knob	46-1927	Volume, Model A2221RU
Knob	46-1826	Volume, Models A2223EU, RU, YU, A2245EU, RU, U, A2246EU, RU, A2252RU, A2253EU, RU, A2673EU, RU
Knob	46-1928	Channel Selector, Model A2221R
Knob	S-41960	Channel Selector, Models A2223E, EU, R, RU, Y, YU, A2245, E, EU, R, RU, U, A2252R, RU, A2253E, EU, R, RU, A2282E, EU, R, RU, A2673E, EU, R, RU
Knob	46-1835	Channel Selector, Models A2246E, EU, R, RU
Knob	S-42909	Channel Selector, Models A3000E, R, A3001E, R, A3004, E, R, A3006E, H, R, A3007R, A3009E, H
Knob	S-22863	Fine Tuning, Models A2221R, RU, A2223E, EU, R, RU, Y, YU, A2245, E, EU, R, RU, U, A2246E, EU, R, RU, A2252R, RU, A2253E, EU, R, RU, A2282E, EU, R, RU, A2673E, EU, R, RU
Knob	S-42039	Fine Tuning, Models A3000E, R, A2001E, R, A3004, E, R, A3006E, H, R, A3007R, A3009E, H
Knob	46-1118	Horiz. Hold
Knob	S-41485	Brightness, Tone, Vert. Hold
Knob	S-41482	Contrast
Knob	S-42026	UHF Dial, Model A2221RU
Knob	S-42058	UHF Dial, Models A2223EU, RU, YU, A2245EU, RU, U, A2246EU, RU, A2252RU, A2253EU, RU, A2282EU, RU, A2673EU, RU
Cabinet	14-2251	Models A2221R, RU
Cabinet	14-2241	Models A2223E, EU
Cabinet	14-2240	Models A2223R, RU
Cabinet	14-2248	Models A2223Y, YU
Cabinet	14-2299	Models A2245, U
Cabinet	14-2299E	Models A2245E, EU
Cabinet	14-2299R	Models A2245R, RU
Cabinet	14-2364E	Models A2246E, EU
Cabinet	14-2364R	Models A2246R, RU
Cabinet	14-2360R	Models A2252R, RU
Cabinet	14-2365E	Models A2253E, EU
Cabinet	14-2365R	Models A2253R, RU
Cabinet	14-2309E	Models A2282E, EU
Cabinet	14-2309R	Models A2282R, RU
Cabinet	14-2301E	Models A2673E, EU
Cabinet	14-2301R	Models A2673R, RU
Cabinet	14-2247	Models A3000E, A3001E
Cabinet	14-2246	Models A3000R, A3001R
Cabinet	14-2297	Model A3004
Cabinet	14-2297E	Model A3004E
Cabinet	14-2297R	Model A3004R
Cabinet	14-2296E	Model A3006E
Cabinet	14-2296H	Model A3006H
Cabinet	14-2296R	Model A3006R
Cabinet	14-2368R	Model A3007R
Cabinet	14-2372E	Model A3009E
Cabinet	14-2372H	Model A3009H

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

AMPLIFIER CHASSIS 3Z01

TUNER PARTS LIST AND DESCRIPTIONS 175-102

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BK7A	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6U8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	12		22-2679	SI 12	D6-120	LT6Q12	GP-12	UC-5412	5GA-Q12	
C202	18	1000	22-2680							5%
C203	18	1000	22-2680							5%
C204	12		22-2679	SI 12	D6-120	LT6Q12	GP-12	UC-5412	5GA-Q12	
C205	3.3		22-2343	NPO-SI 3.3	TCZ-3R3	C10V33C	TCO-3.3	ZT-5533	5TCCB-V33	
C206	8.2		22-2681	NPO-SI 8.2		C10V82C	TCO-8.2			NPO 5%
C207	1.8		22-2428							
C208	1000		22-2889	EF-001	MFT-1000				503C-D1	
C209	1000		22-2889	EF-001	MFT-1000				503C-D1	
C210	25		22-2671	N750-SI 2.5	TCN-25	C10Q25U	TC7-25		5TCU-Q25	N750 10%
C211	1000		22-2889	EF-001	MFT-1000				503C-D1	
C212	1.0		22-2720	NPO-SI1.0	TCZ-1		TCO-1		5TCCB-V1	
C213	1.0		22-2714							N1500 10%
C214	5		22-2716							N330 5%
C215	5		22-2716							N330 5%
C216	1000		22-2889	EF-001	MFT-1000				503C-D1	
C217	1000		22-2889	EF-001	MFT-1000				503C-D1	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

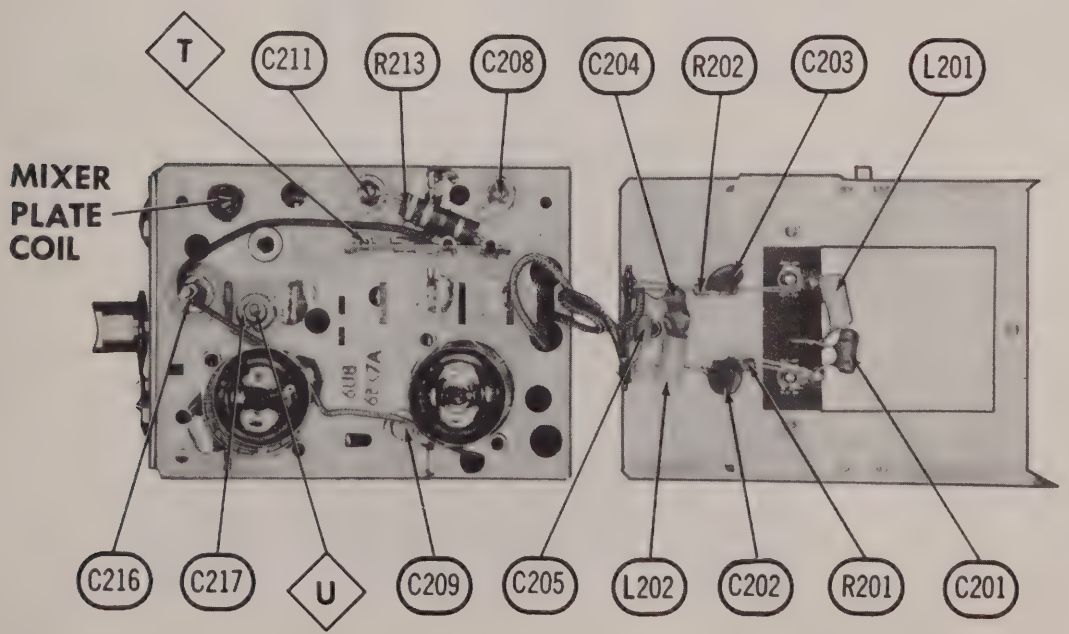
ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R201	230K			
R202	230K			
R203	22K			
R204	2.2meg			
R205	120K			
R206	100K			
R207	1200Ω			

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R208	100K			
R209	100K			
R210	10K			
R211	10K	2	63-3176	
R212	4700Ω			
R213	470Ω	2	63-2398	

COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L201	IF Trap Coil	20-567	
L202	IF Trap Coil	20-567	
L203	Ant. Trans.	S-24644	Alt. part #24645
L204	Ant. Coils	S-23641	Channel 2-13 Wafer Assy.
L205	Neut. Coil	20-633	

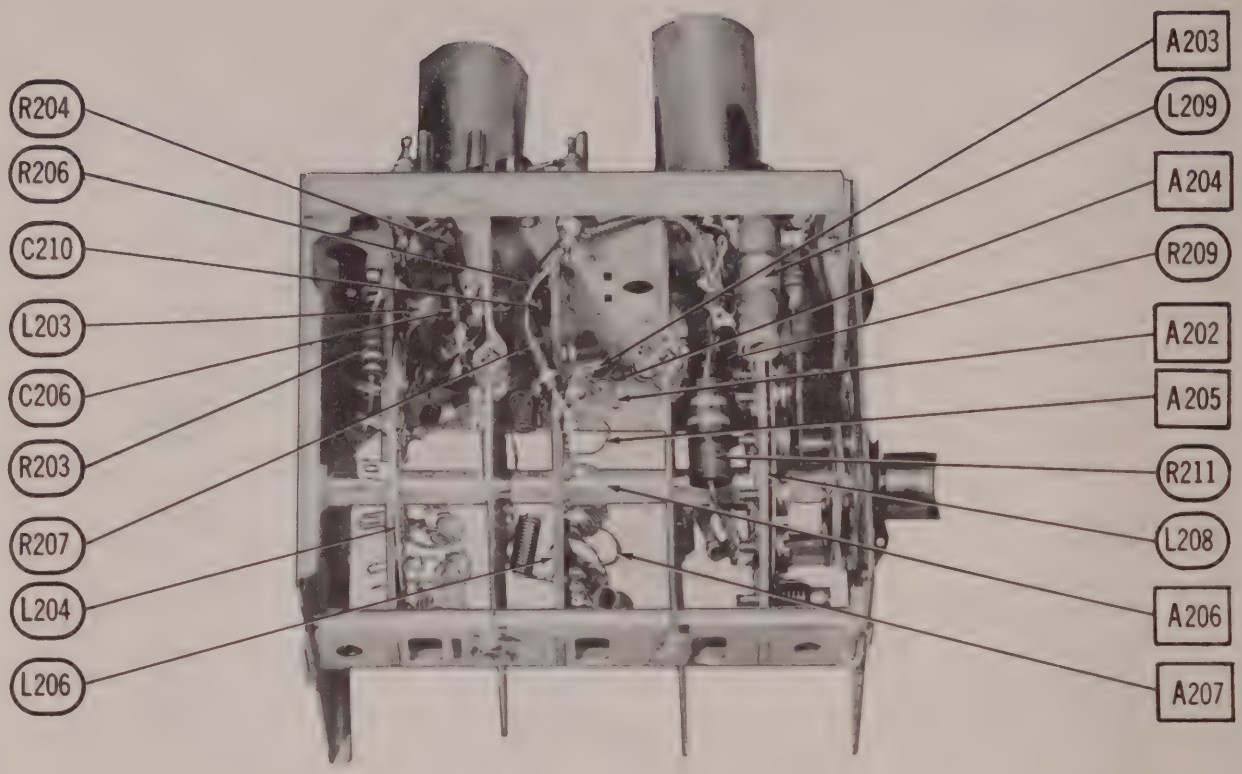
ITEM No.	USE	ZENITH PART No.	NOTES
L206	RF Coils	S-23640	Channel 2-13 Wafer Assy.
L207	Mixer Screen Coil	20-632	
L208	Osc. Coils	S-41807	Channel 2-13 Wafer Assy.
L209	Mixer Plate Coil	S-41665	



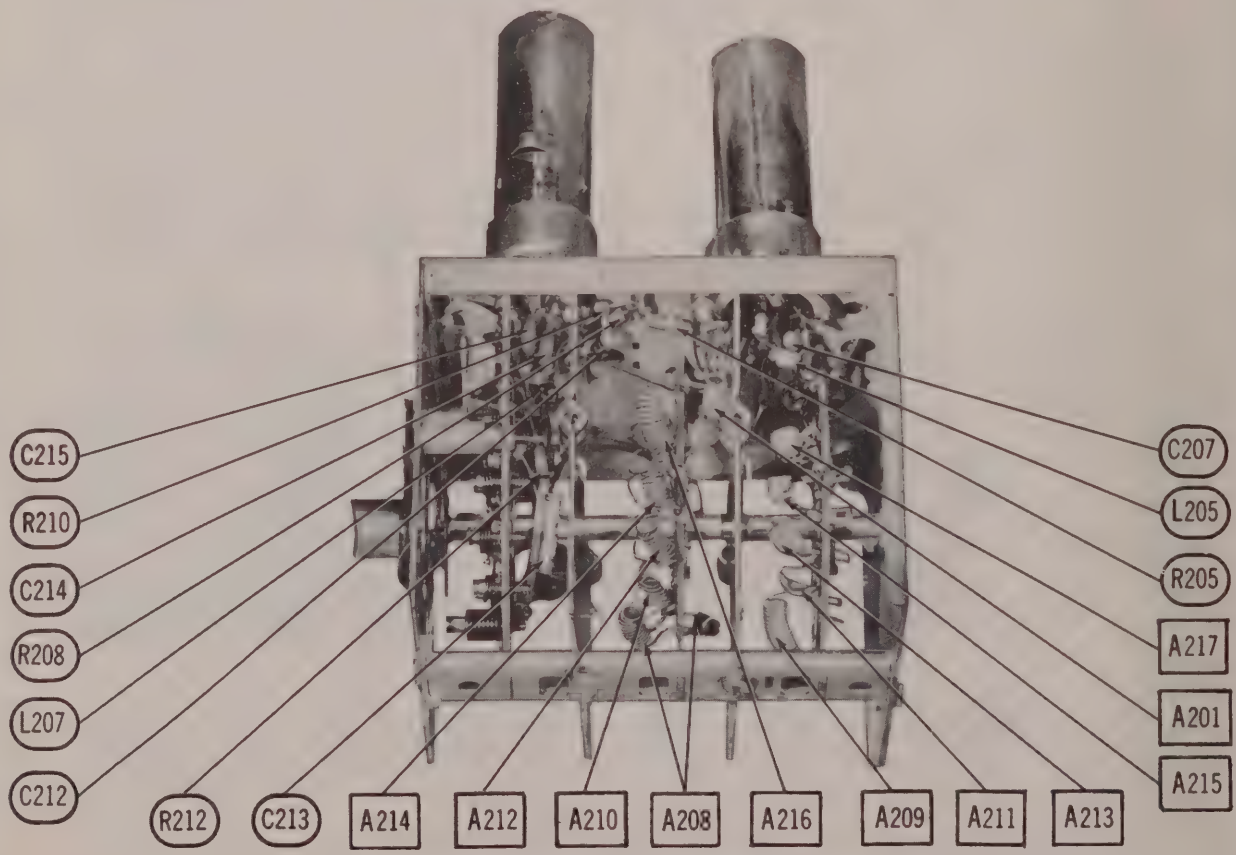
TUNER 175-102 - TOP VIEW

ZENITH CHASSIS 17A30, Q, U, 17A31Q, 3Z01

FOLDER 4



TUNER #175-102 - LEFT SIDE



TUNER #175-102 - RIGHT SIDE

TUNER PARTS LIST AND DESCRIPTIONS S-42842

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	6BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6CG8A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		22-2922	NPO-DI 120	D6-121	L10T12		5TCC-T12	10%
C202	30		22-2921						5%
C203	28		22-2920						10%
C204	12		22-2919						10%
C205	800		22-2958						
C206	1.0-4.5		22-3009						
C207	5.0-10		22-3006						
C208	47		22-3007						5%
C209	800		22-2958						
C210	800		22-2958						
C211	1.0-4.5		22-3009						
C212	47		22-2915						10%
C213	30		22-2916						
C214	1000		22-2993	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C215	1000		22-3058	EF-001	MFT-1000			503C-D1	
C216	7.5		22-3026						N150 ± .25mmf
C217	18		22-3025						N220 10%
C218	800		22-2958						

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

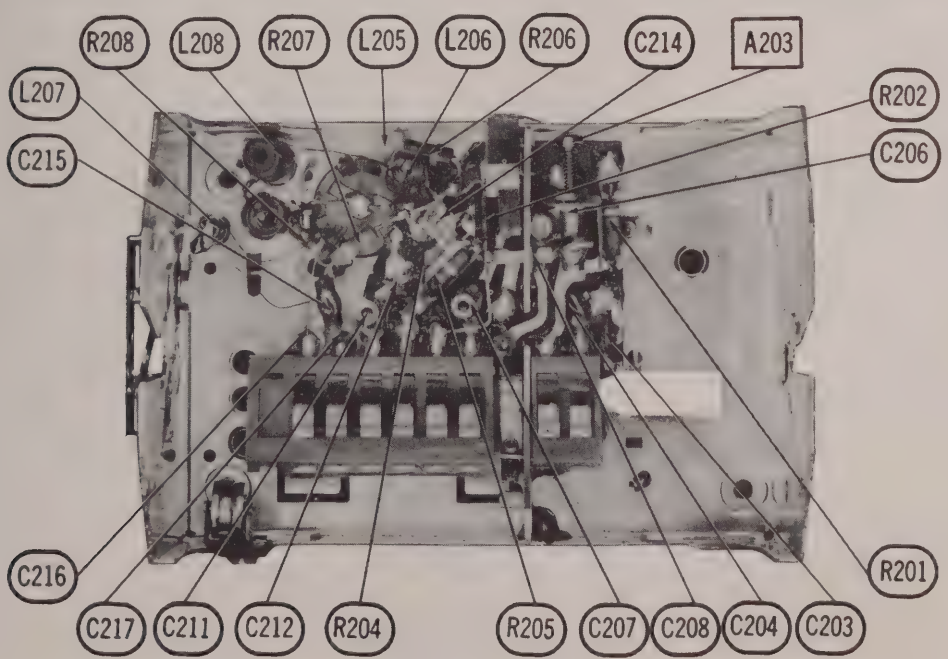
ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R201	4700Ω			
R202	1000Ω			
R203	5600Ω	7	63-3986	
R204	3900Ω			

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R205	220K			
R206	10K			
R207	3900Ω			
R208	3900Ω			

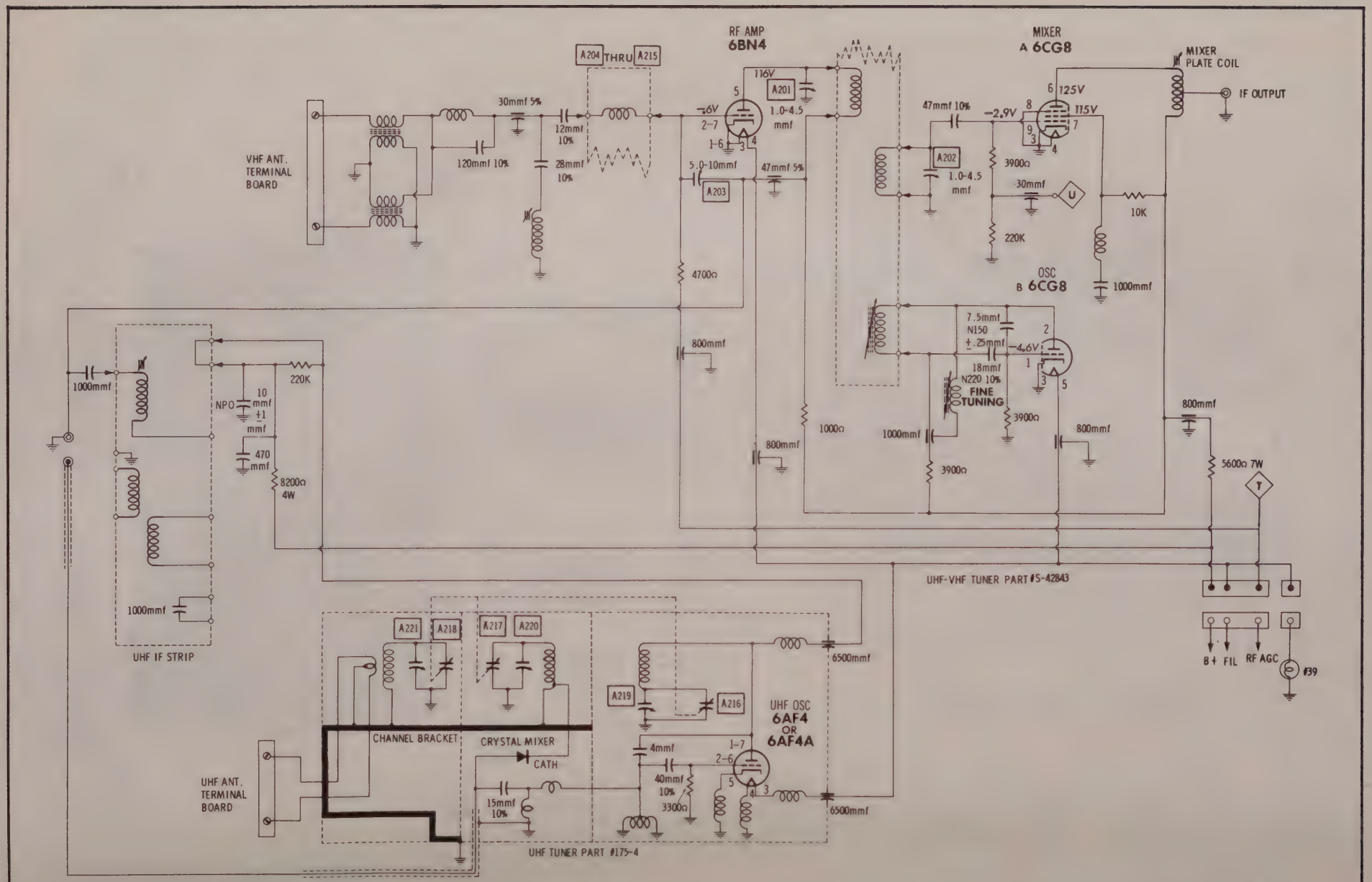
COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L201	Ant. Trans.	S-41511	Includes L202 & C201
L202	IF Trap Coil	20-657	
L203	IF Trap Coil	S-40497	
L204A	Ant, RF, Mixer Grid, Osc. Coils	S-40472	Channel 2
B	"	S-40473	Channel 3
C	"	S-40474	Channel 4
D	"	S-40475	Channel 5
E	"	S-40476	Channel 6
F	"	S-40477	Channel 7
G	"	S-40478	Channel 8

ITEM No.	USE	ZENITH PART No.	NOTES
L204H	Ant., RF, Mixer Grid, Osc. Coils	S-40479	Channel 9
I	"	S-40490	Channel 10
J	"	S-40491	Channel 11
K	"	S-40492	Channel 12
L	"	S-40493	Channel 13
L205	Fil. Choke	20-734	
L206	RF Choke	20-721	
L207	Fine Tuning Coil	S-43559	
L208	Mixer Plate Coil	S-42968	



TUNER S-42842-BOTTOM VIEW



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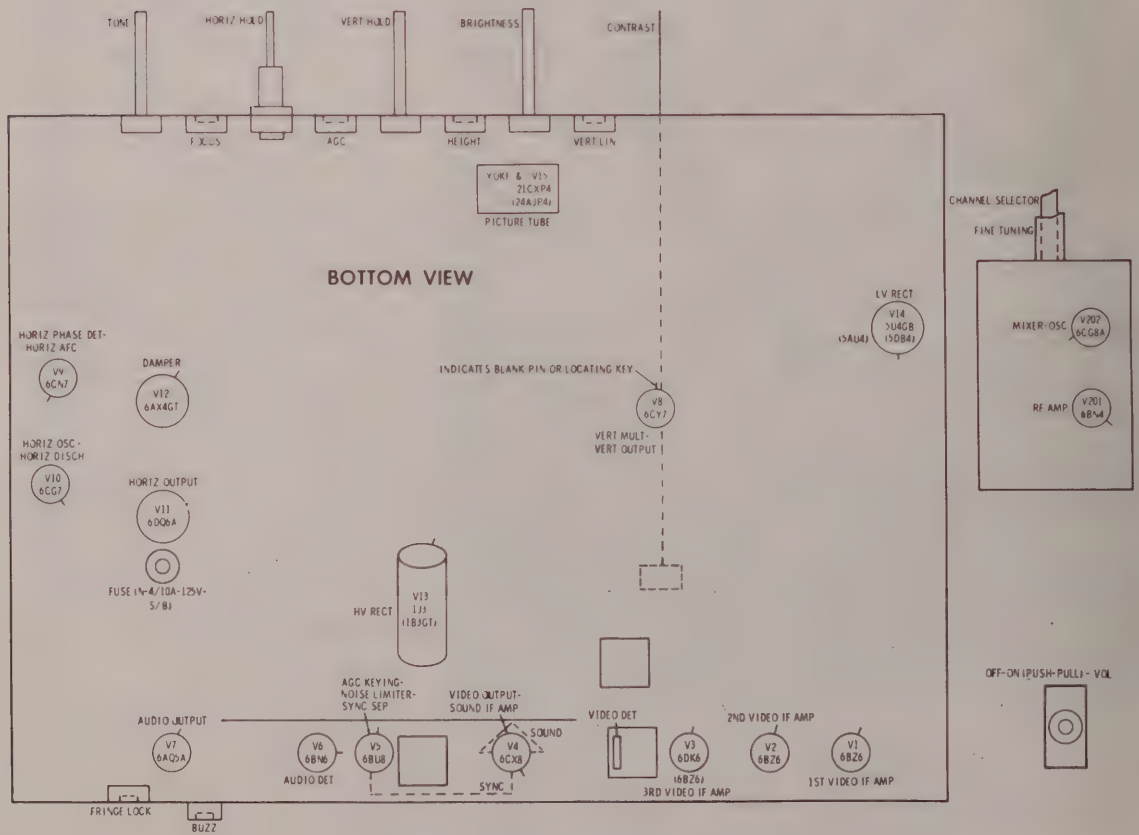
UHF-VHF TUNER #S-42843 & UHF TUNER #175-4

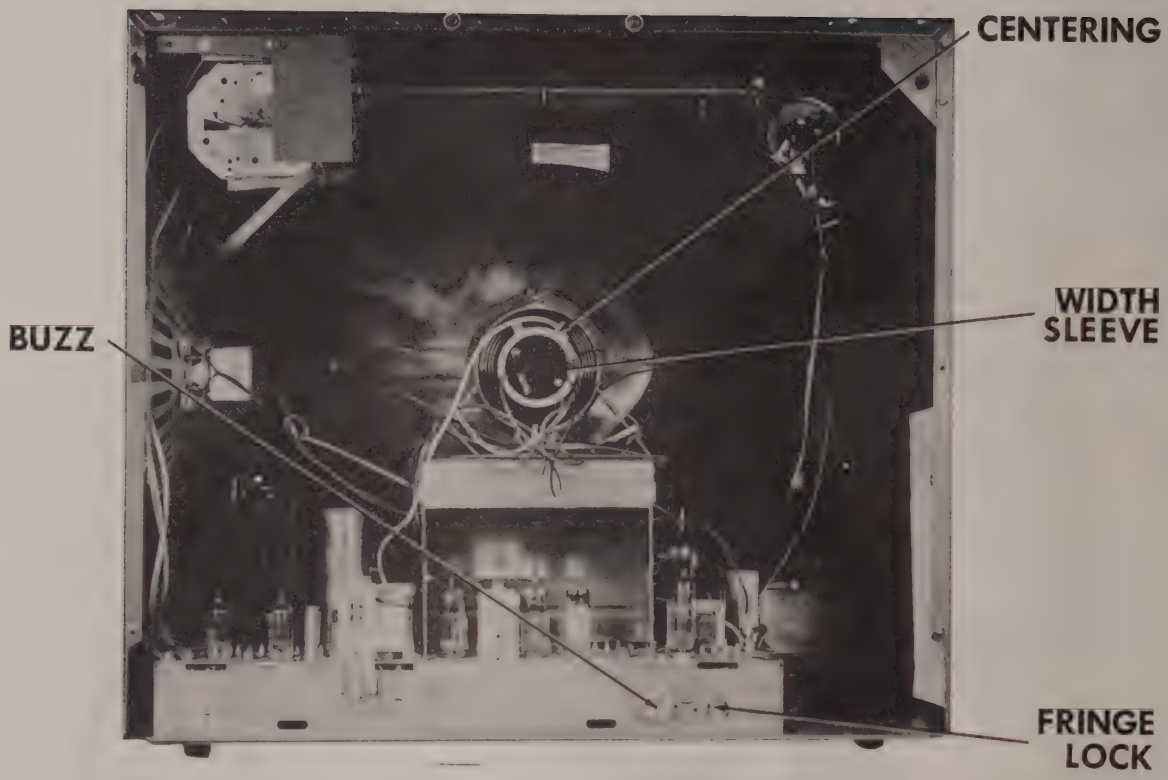
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	800K	1500Ω	.1Ω	0Ω	▪ 240Ω	▪ 240Ω	0Ω		
V2	6BZ6	60K	▪ 22Ω	.1Ω	0Ω	† 220Ω	† 220Ω	INF		
V3	6DK6	.1Ω	120Ω	.1Ω	0Ω	† 8200Ω	† 8200Ω	0Ω		
V4	6CX8	0Ω	100K	† 60K	.1Ω	0Ω	22Ω	2700Ω	† 27K	† 5500Ω
V5	6BU8	0Ω	† 20K	† 420K	.1Ω	0Ω	400K	• 1.5meg	† 40K	14meg
V6	6BN6	• 280Ω	.3Ω	.1Ω	0Ω	† 27K	5.1Ω	† 390K		
V7	6AQ5A	0Ω	680Ω	.1Ω	0Ω	† 1200Ω	† 470Ω	0Ω		
V8	6CY7	† 400Ω	NC	2.2meg	0Ω	.1Ω	• ‡ 4meg	• 500K	0Ω	• 1300Ω
V9	6CN7	0Ω	200K	100Ω	0Ω	.1Ω	390Ω	1.2meg	† 68K	NC
V10	6CG7	† 235K	39K	0Ω	0Ω	.1Ω	† 0Ω	32K	10K	NC
V11	6DQ6A	TP	.1Ω	TP	† 10K	1meg	TP	0Ω	0Ω	TOP CAP ‡15.5Ω
V12	6AX4GT	NC	TP	¶ 150K	NC	† 0Ω	NC	0Ω	.1Ω	
V13	1J3		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡265.5Ω
V14	5U4GB	NC	¶	TP	28Ω	NC	26Ω	TP	¶	
V15	21CXP4	.1Ω	27K	Pin 6 • ‡ 1meg	Pin 10 † 65K	Pin 11 • 180K	Pin 12 0Ω			
V201	6BN4	0Ω	2.7meg	0Ω	.1Ω	† 6600Ω	0Ω	2.7meg		
V202	6CG8A	3900Ω	† 9500Ω	0Ω	0Ω	.1Ω	† 5600Ω	† 10K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 270V SOURCE.
‡ MEASURED FROM PIN 3 OF V12.
▪ MEASURED FROM PIN 7 OF V2.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast Controls for a normal picture.

Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

PHOTOFACT* Folder

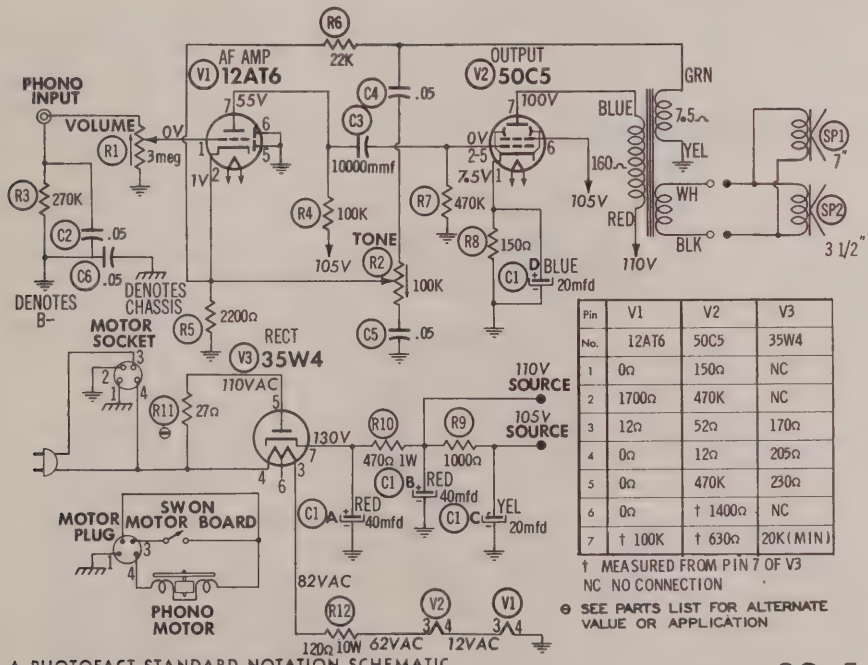
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

AIRLINE
MODEL GAA-1002

AIRLINE
MODEL GAA-1002

TRADE NAME	Airline Model GAA-1002A, GAA-1007A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	AC Operated Phono Amplifier with 4 Speed Automatic Record Changer
TUBES (Three)	Types 12AT6 AF Amplifier, 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING .26 Amp. @117 Volts AC (24 Watts Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER—SEE SIMILAR V-M 1200A—PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10.



Pin No.	V1 12AT6	V2 50C5	V3 35W4
1	0Ω	150Ω	NC
2	1700Ω	470K	NC
3	12Ω	52Ω	170Ω
4	0Ω	12Ω	205Ω
5	0Ω	470K	230Ω
6	0Ω	† 1400Ω	NC
7	† 100K	† 630Ω	20K(MIN)

† MEASURED FROM PIN 7 OF V3
NC NO CONNECTION
⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

408-5

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H466

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SET 408 FOLDER 5

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AT6	
V2	Output	50C5	
V3	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Airline PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150	1019		BBRQ44315C	WQ230		CST-524	R2527*
B	40	150						MMT-0220	
C	20	150							
D	20	25							

* Non Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Airline PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C3	10000	600		BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C4	.05	200		P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C5	.05	200		P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C6	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Airline PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	401E	B-85	A47-3meg-Z	Q13-140	U57	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	100K	½	416	B-40	A47-100K-S	Q11-128	U41	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Airline PART No.	NOTES
R3	270K			
R4	100K			
R5	2200Ω			
R6	22K			
R7	470K			
R8	150Ω			
R9	1000Ω			
R10	470Ω	1		
R11	27Ω		542	Note 1
R12	120Ω	10	625	

Note. 1 Fuse Type.

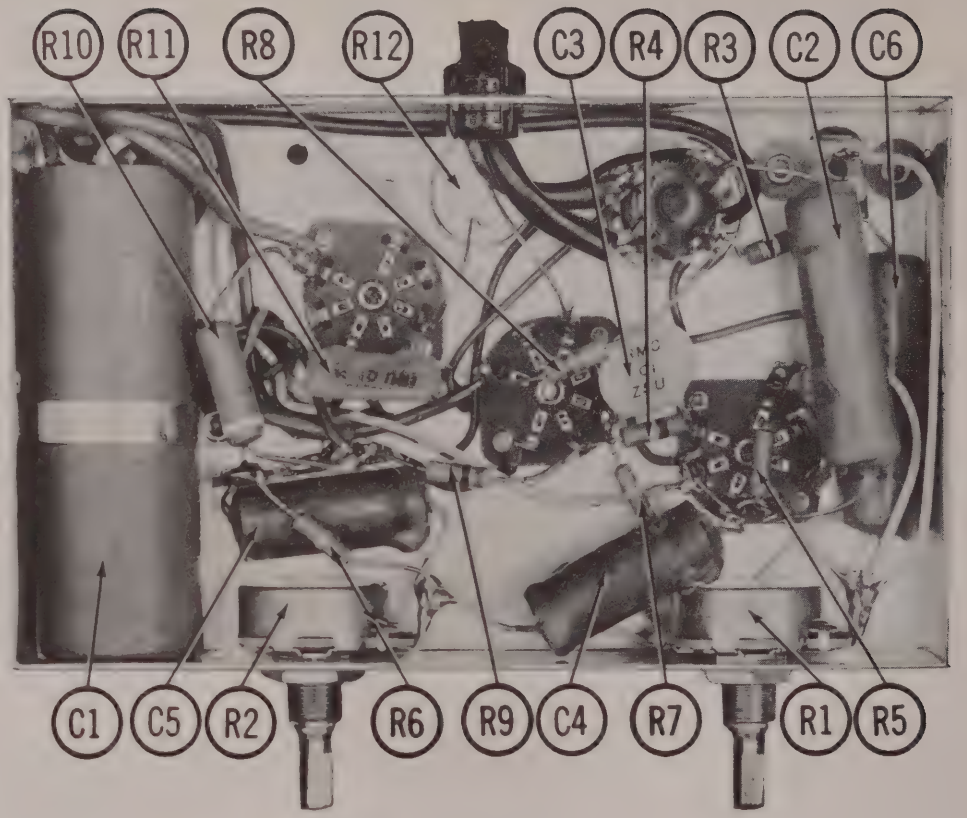
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC. 1	REPLACEMENT DATA Airline PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2400Ω	3-4Ω	1209C							
	TURNS RATIO SEC. 2									
	5	:1								

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Airline PART No.	QUAM PART No.	NOTES
SP1	7"	PM	3-4Ω	2629	7421	
SP2	3 1/2"	PM	14Ω	2633	3A15T	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA Airline PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M1	60-48	81-TB		56	*PT-2	* Not required unless original mounting bracket is damaged.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	2443	Tone
Knob	2444	Volume

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

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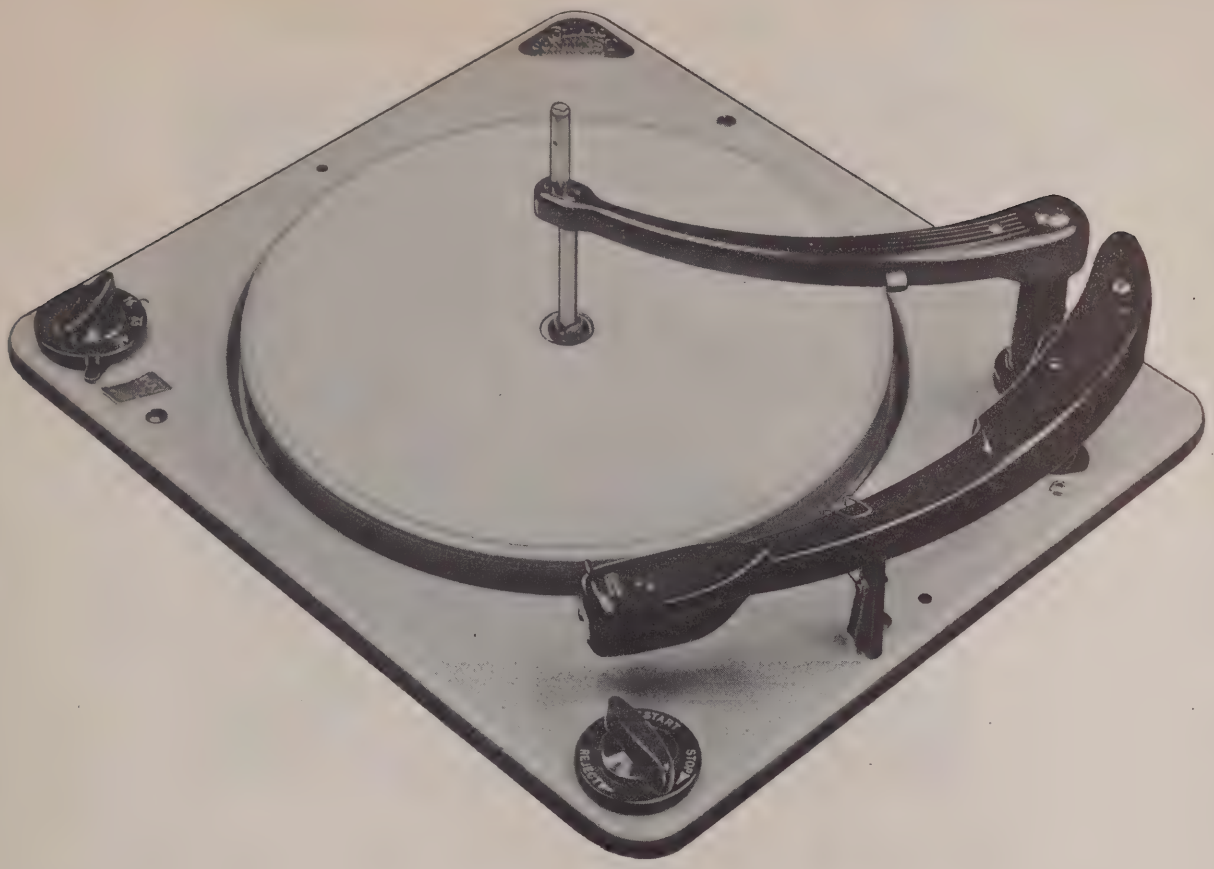
**COLLARO MODEL
"Conquest" Revised TC-340-E**

COLLARO MODEL
"Conquest" Revised TC-340-E



COLLARO MODEL
"Conquest" Revised TC-340-E

GENERAL INFORMATION

The Collaro Conquest Model TC-340-E record changer plays 16 2/3-, 33 1/3-, 45-and 78 rpm records of standard commercial dimensions.

This changer automatically plays and changes records, and shuts off after the last record has been played.

The velocity tripping method is used to change records.

This changer is to be connected to an outlet supplying 110-120 volts, 60 cycles only.

Distributed in the U.S.A. by:

Rockbar Corporation
650 Halstead Avenue
Mamaroneck, New York

Manufactured by:

Collaro, Ltd.
Ripple Works, By-Pass Road
Barking, Essex
England

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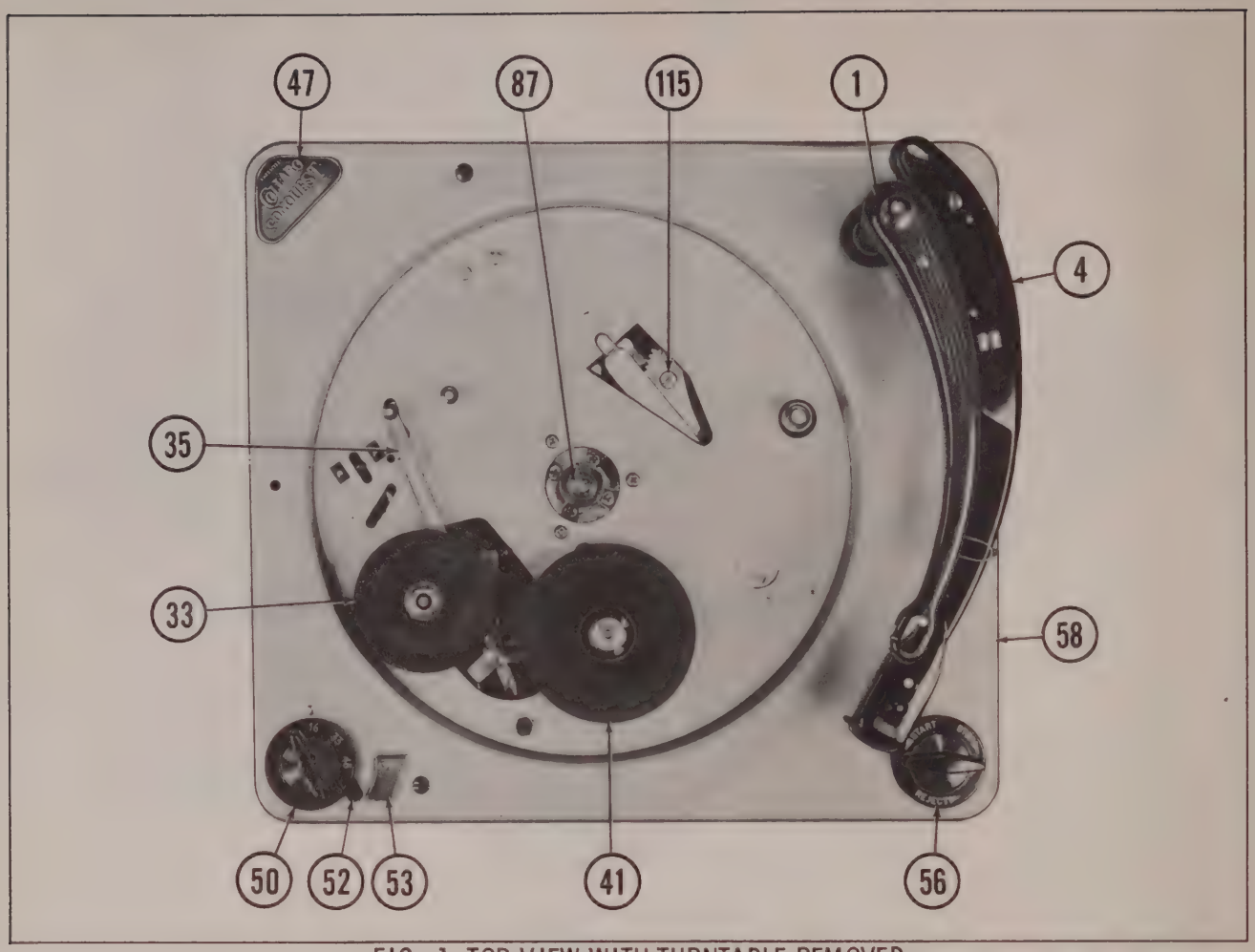

FIG. 1 TOP VIEW WITH TURNTABLE REMOVED

OPERATING INSTRUCTIONS

Loading

Hold record balancing arm (1) by metal clip (2), lift clear of spindle and swing out over pickup arm. Place records on spindle and lower to offset step. Holding records level, replace record balancing arm on spindle.

Starting

Before starting changer, check stylus and speed controls for proper settings. Turn "Start-Stop-Reject" control (56) to left and release when turntable begins to rotate. Changer operates automatically until last record has been played, at which time the pickup returns to rest (44) and supply to motor is switched off.

Stopping

The changer may be stopped at any time by turning "Start-Stop-Reject" control (56) fully to the right. Power to motor is then switched off, and pickup arm may be returned to its rest (44).

Note: Rubber-tired drive pulleys (33 and 41) are retracted automatically when unit is turned off. Thus, flats on tires from prolonged contact under pressure during periods when the record changer is idle are avoided. Flats will cause noisy running and an uneven turntable speed.

CHANGE CYCLE

Observe the change cycle operation by rotating the "Start-Stop-Reject" knob to "Reject" position and rotate cam gear assembly (116) by hand. The following action can then be followed and the function of each part more easily understood. This record changer is provided with a "Velocity Trip" mechanism. The change cycle is started by the faster inward motion of the pickup arm when the needle enters the lead-out groove at end of record.

Pickup arm assembly and pickup tripping arm pushes striker feed lever (127), which in turn carries striker arm (119) in toward turntable hub. Striker arm (119) is fed inwardly by the friction of its own weight resting on curved end of striker feed lever (127).

While a record is playing, slight movement of striker arm (119) is not sufficient to trip mechanism because, on each revolution of turntable, wiping action by turntable hub projection (30) moves striker arm (119) back far enough to clear hub projection.

When needle enters lead-out groove of record, causing pickup arm to advance rapidly toward spindle, striker arm (119) is moved fast enough and far enough to engage turntable hub projection (30). As hub projection engages striker arm (119), striker arm is pushed away from turntable hub (toward pickup arm) far enough to cause intermediate gear (128) and intermediate gear bracket (122) to pivot and release cam

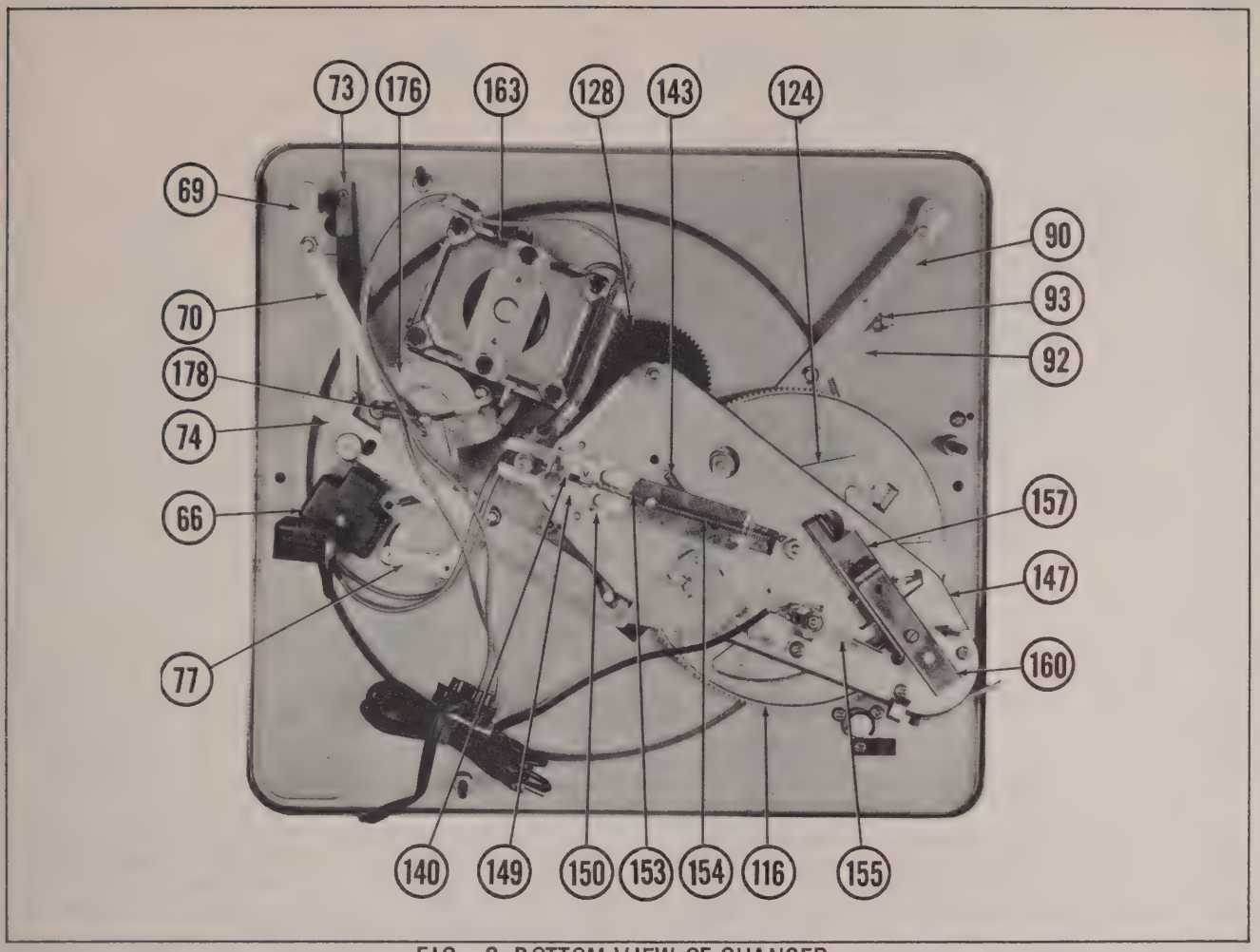

FIG. 2 BOTTOM VIEW OF CHANGER

gear (116) from flange on bottom of cam gear. This action unlocks cam gear (116) from its out-of-cycle position and permits drive pulley (41) and its associated gear train to be pulled into contact with the motor shaft, thus being in position to drive the mechanism through the change cycle.

As main cam gear (116) starts to rotate, cam gear locating roller (145) moves out of its notch in main cam gear, causing pickup lift lever (157) to pivot, raising pickup lift spindle (25). Pickup lift spindle (25) raises pickup arm (4) from the record.

At the same time, muting switch assembly (155) is closed, shorting out pickup cartridge. This prevents undesirable noises from coming through the amplifier while the mechanism is in cycle.

Simultaneously, pickup positioning lever (106) moves along outside groove of cam gear (116), which is rotating clockwise. This connection directs the pickup arm outward through a friction clutch arrangement when that phase of the change cycle is reached.

As cam gear (116) continues to rotate, pickup positioning lever (106) runs along groove, causing pickup to move onto edge of record. This also determines pickup setdown position. Cam gear (116) continues to rotate, and pickup positioning lever (106) reaches a point where the groove forces pickup arm to move back from record.

As cam gear (116) continues to rotate, projection (116A) contacts record dropping slide (149), forcing it toward the spindle. This moves record selector pawl (86) upward in spindle, dropping record on turntable.

Pickup arm now moves inwardly to right setdown position. As cam gear (116) comes to its out-of-cycle position, cam gear locating roller (145) rolls down an incline on cam gear. This causes pickup lift lever (157) to pivot, pulling pickup lift spindle (25) down, making pickup arm contact lead-in grooves.

The mechanism is automatically indexed for pickup arm to set down on either a 7", 10", or 12" record. This is accomplished by pickup arm striking edge of records on spindle, causing clutch arrangement to slip; pickup position lever (106) then seeks a path on cam gear (116) corresponding to the size record dropped from spindle shelf.

During preceding sequence of lowering arm to record, muting switch (155) opens, and pickup cartridge becomes "live" again.

The projection on bottom of cam gear (116) now moves against intermediate gear bracket (122) and locks cam gear (116) in the out-of-cycle position. This action also draws drive pulley (41) away from motor shaft, completing the change cycle.

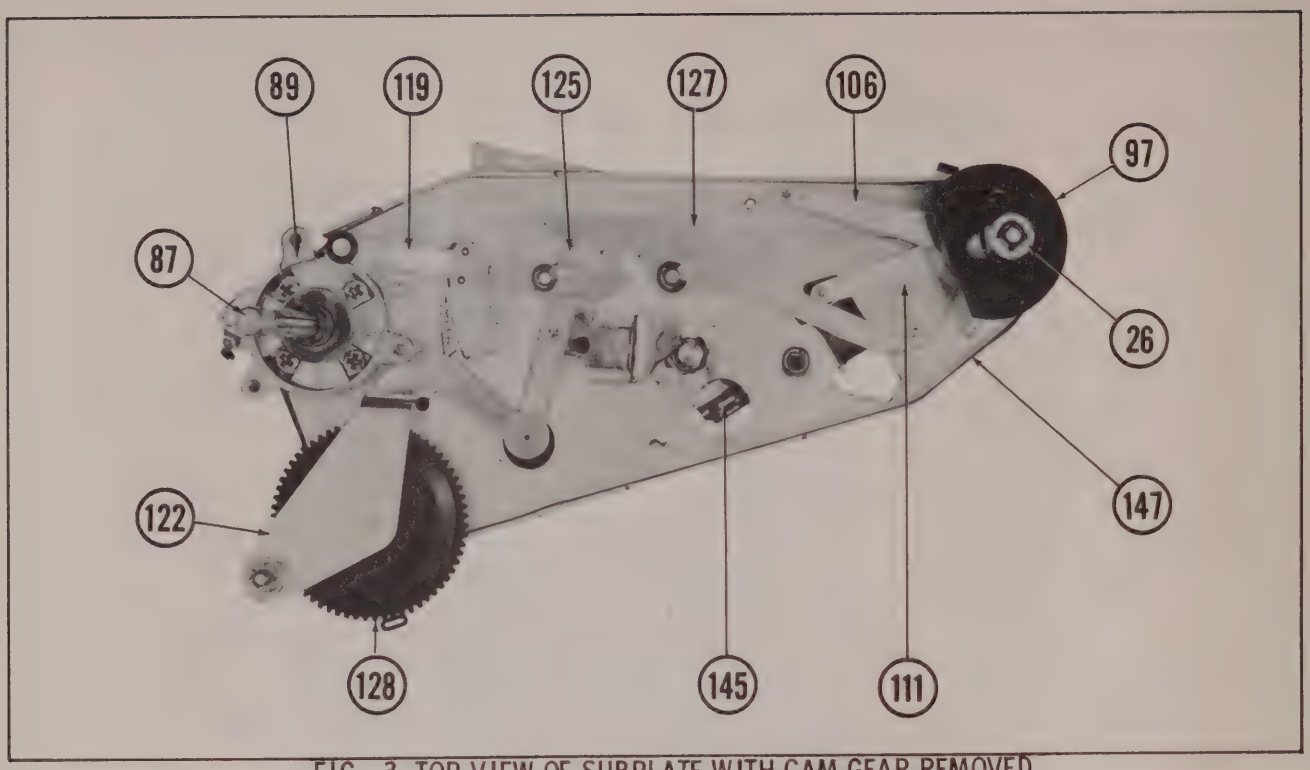

FIG. 3 TOP VIEW OF SUBPLATE WITH CAM GEAR REMOVED

AUTOMATIC STOP

Automatic stop is brought into operation after the last record has been played. Cam gear spring blade (124) strikes control switch-off lever (90) sideways, actuating manual control link (74) and disengaging switch control lever (77).

ADJUSTMENTS

Needle Setdown

Stylus setdown position on record may be adjusted by means of an eccentric roller (115) on cam gear (116). Turning this eccentric widens or narrows the test track. Before moving eccentric, mark cam and track adjuster with a pencil. For setdown position farther in from edge of record, make test track wider; pickup setdown nearer edge of record, make test track narrower.

This adjustment can be made in two ways:

Eccentric roller (115) is accessible through a cutout in baseplate, after removing turntable; or, this adjustment may also be made from underneath if there is enough room below the changer to manipulate a screwdriver. The electric supply must be disconnected before adjusting. Turn "Start-Stop-Reject" knob (56) to "Reject" and turn cam gear (116) clockwise until eccentric screw appears.

This operation may have to be carried out several times before the correct setdown position is obtained.

Changer automatically positions all records, and the foregoing adjustment affects all positions equally.

Pickup Height Adjustment

Pickup height during change cycle is controlled by height adjusting screw (162). To increase height, turn screw clockwise; to decrease, turn screw counterclockwise. Pickup arm should clear bottom of records on spindle shelf by 1/8".

Record Dropping Adjustment

This adjustment is normally unnecessary unless changer has been dismantled to make replacements.

To replace or check adjustment:

1. Remove all records and disconnect power.

2. Turn "Start-Stop-Reject" knob (56) to "Reject". Turn cam gear (116) clockwise until large-diameter post on cam gear pushes record dropping slide (149) to its extreme position. Record selector pawl (86) should now rise almost to top of slot above step on spindle and pushing portion of pawl should protrude slightly beyond outer edge of shelf.

3. Set pawl adjusting plate (150) halfway up its slot and lightly tighten screws (125). Make sure dropping slide (149) is pushed forward to its limit by means of cam gear (116). Then adjust pawl upward by means of self-locking nut (138) until a clearance of .016" is obtained between position of pawl and slot above step in spindle. Adjust plate (150) until it cannot be pushed forward any further. Adjust to give .015" clearance between selector pawl stop and bottom end of pawl.

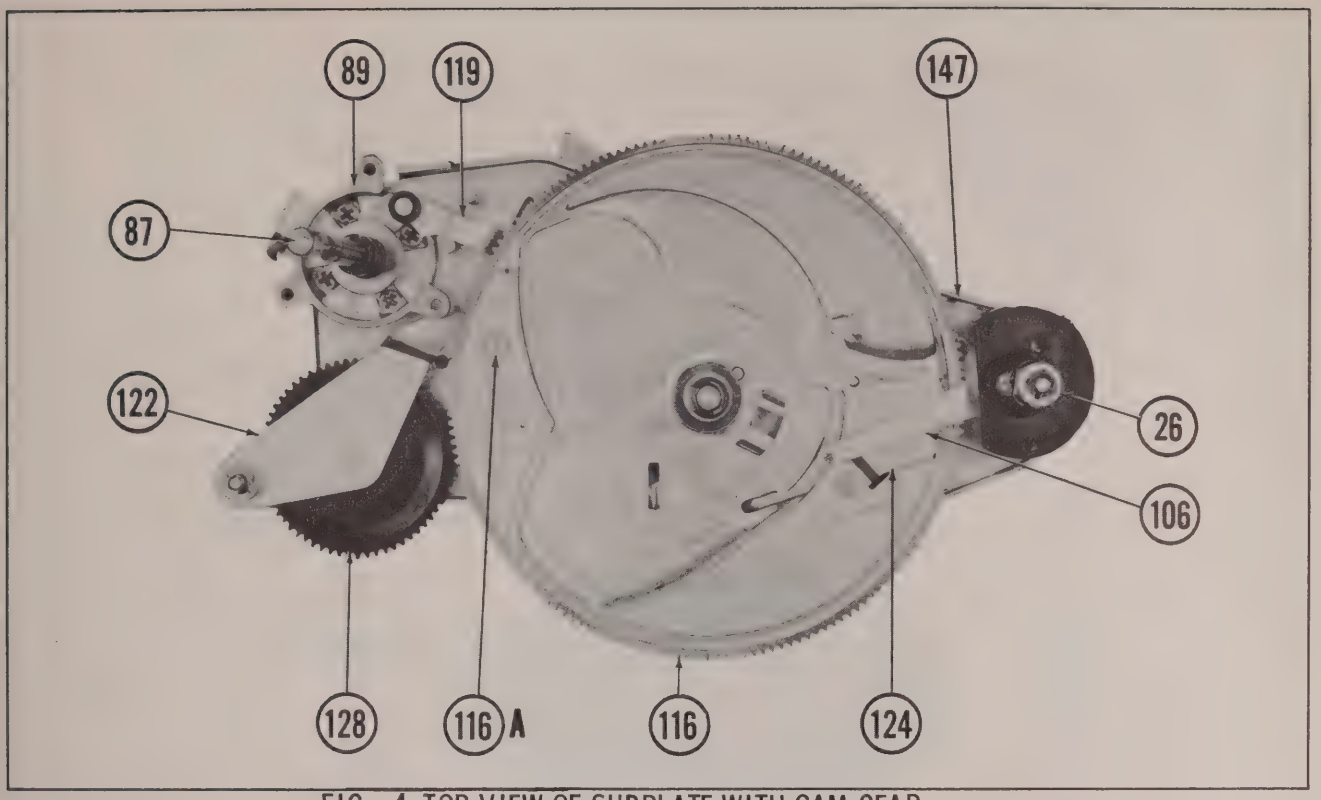

FIG. 4 TOP VIEW OF SUBPLATE WITH CAM GEAR

MOTOR AND TURNTABLE DRIVE MAINTENANCE

The motor normally requires no lubrication, as it is fitted with self-oiling bearings. The only maintenance necessary is to occasionally remove the turntable to clean its inner rim, and driving surfaces of motor pulley and idler wheel (33) by wiping with a clean, solvent-moistened rag. Thrust washers and ball race under turntable should also be cleaned with a petroleum solvent and relubricated with a small amount of soft grease if necessary.

TROUBLE CHART

Symptom	Cause	Remedy
Motor runs slowly; unevenly; noisy or background rumble.	1. Bearings out of alignment.	1. With motor running, tap motor lightly on all sides to line up bearing.
	2. Rotor not centered in stator.	2. Loosen motor clamp bolts, heads on bottom of motor frame, insert 2 shims 1" wide by .010" thick between stator and rotor, tighten bolts and remove shims.
Turntable runs slowly; has background rumble, noisy running or wow.	1. Extra steel or neoprene washer, incorrect washer fitted under turntable bearing.	1. Remove retaining clip (12) from center of turntable.
	2. Dirty or dry thrust ball cage (81).	2. Clean and lubricate.
	3. Damaged steel thrust washer (80).	3. Replace.
	4. Damaged ball in thrust ball cage (81).	4. Replace thrust ball cage.

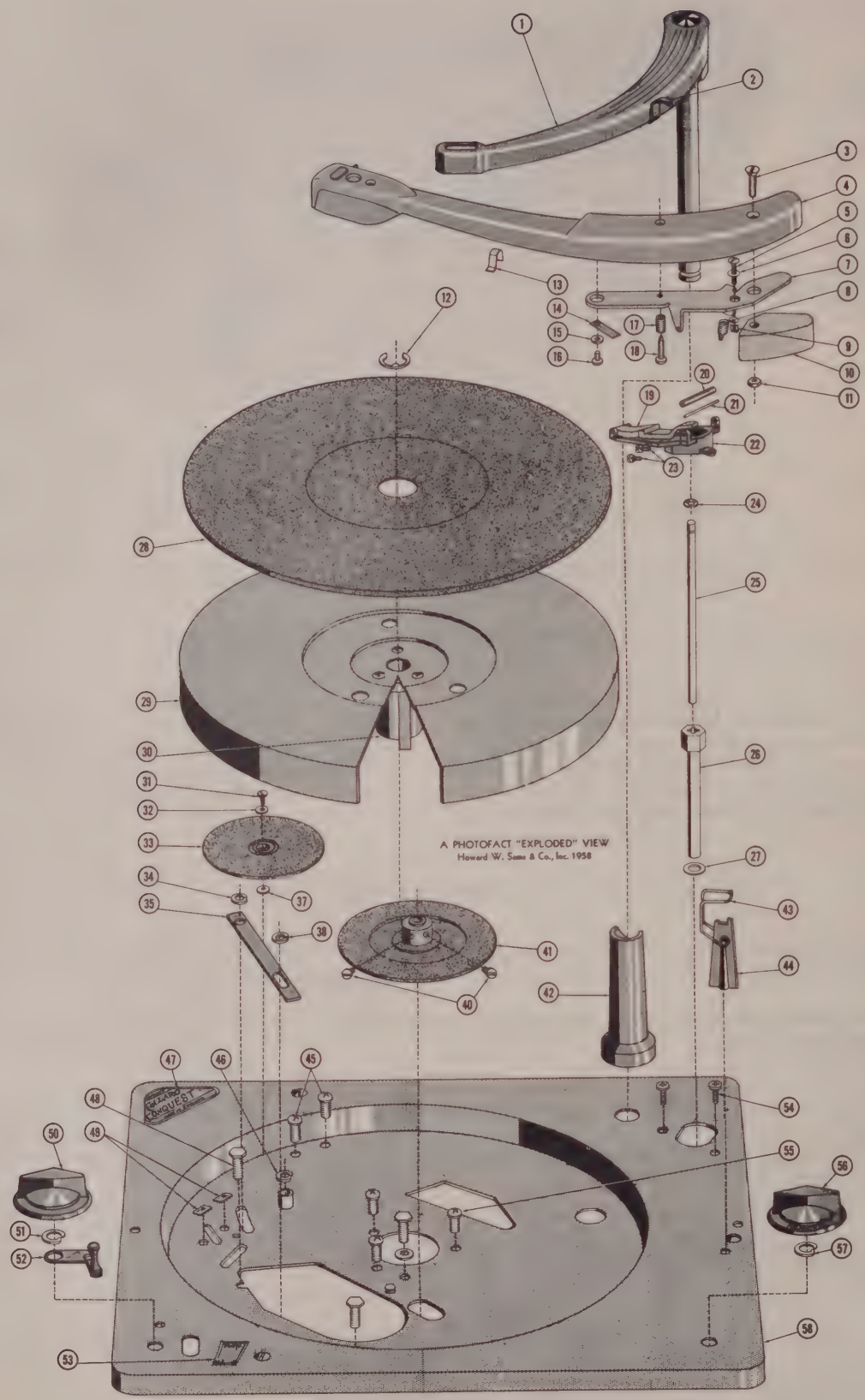

FIG. 5A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

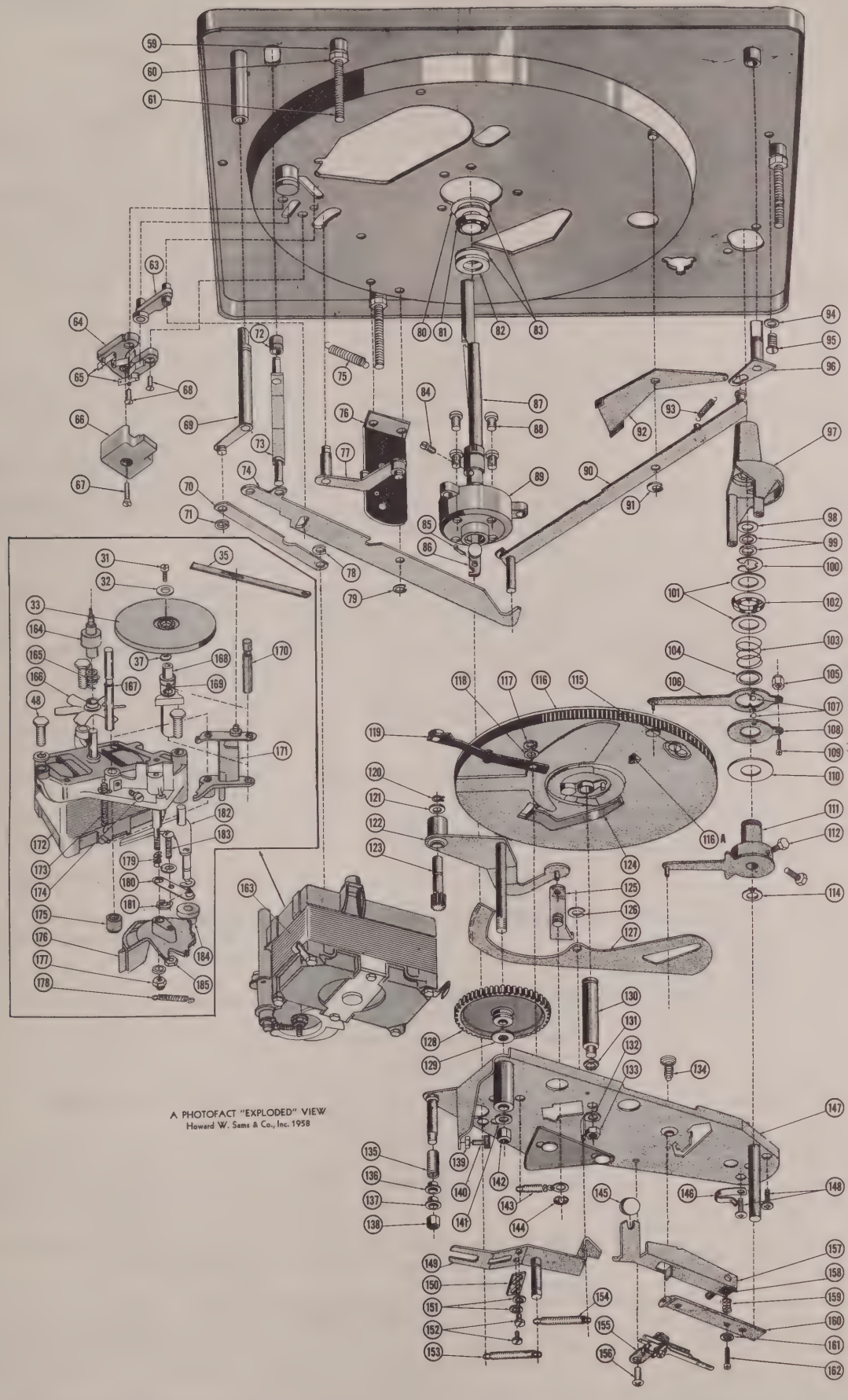

FIG. 5B EXPLODED VIEW OF PARTS BELOW BASEPLATE

TROUBLE CHART (CON'T)

Symptom	Cause	Remedy
	5. Ball binds in thrust ball cage (81).	5. Free and lubricate.
	6. Damaged thrust ball cage contacts thrust washer or binds on spigot.	6. Replace damaged thrust ball cage (81).
	7. No end play in bearing.	7. Make sure turntable bearing with retaining clip in place has .015" maximum end play.
Motor pulley flutters or causes cross-modulation.	1. Bent motor spindle.	1. Straighten or replace.
	2. Enlarged bore in pulley (164).	2. Replace pulley.
	3. Burr on motor slide arm spindle (167).	3. Remove burr.
Motor pulley noisy.	1. Enlarged bore in pulley (164).	1. Replace pulley.
	2. Undersized motor slide arm spindle (167).	2. Replace with correct size spindle.
Motor pulley causes wow or slow running.	1. Upper face of idler wheel (41) overlaps step on motor pulley (164).	1. Adjust so that it contacts proper step.
	2. Lower face of idler wheel (41) contacts flange of motor pulley (164).	2. Adjust so that it contacts proper step.
Idler wheel causes wow or noisy running.	1. Distorted idler wheel (41).	1. Replace.
	2. Rubber tire on idler wheel damaged.	2. Replace.
	3. Boss loosened in idler wheel (41).	3. Tighten boss or replace idler wheel (41).
	4. Bushing tight on spindle.	4. Free bushing.
	5. Dry bearing.	5. Clean and lubricate bearing.
	6. No end play in bearing.	6. Bearing must have .005" end play with retaining washer and screw in place.
	7. Washer omitted above or below bearing, permitting rim of wheel to override flange of motor pulley (164).	7. Install new washer.
	8. Extra washer or incorrect washer fitted, causing lack of play and possible tightness.	8. Remove extra washer.
Slow running.	1. Distorted idler swivel arm (168).	1. Idler swivel arm must be square to motor spindle.
	2. Rim of idler wheel (41) overrides edge of step of motor pulley (164).	2. Reset idler wheel so that it rides on correct step.
Drive fails to engage on 78 rpm step on motor pulley (164).	1. Idler swivel arm (168) hitting motor frame.	1. Adjust nut (177) after first checking to see if motor pulley is at correct level.
No drive, or uneven speed on 78 rpm.	1. Incorrect setting of slide arm spindle (167).	1. Idler wheel (33) must clear top of spindle (167) when operating at 78 rpm.

Symptom	Cause	Remedy
	2. Incorrect adjustment of nut (177).	2. Adjust so that wheel is set at correct working level relative to each driving diameter of motor pulley (164).
Slow or uneven turntable speed, or turntable does not rotate.	1. Holes in idler slide arm (171) through which idler slide arm spindle (170) passes are out of line.	1. Realign so that idler slide arm spindle (170) rotates freely.
	2. Idler slide arm spindle (170) bent.	2. Straighten or replace.
	3. Forks of idler slide arm (171) bent or twisted and pinching boss of idler swivel arm (168).	3. Straighten forks so that boss of idler swivel arm is free.
	4. Set screw (174) loose, allowing slide arm spindle (170) to drop out of engagement with top fork of idler slide arm (171).	4. Reset spindle and tighten set screw (174).
	5. Hole in idler slide arm (171) through which slide arm spindle (167) passes is out of alignment.	5. Realign idler swivel arm so that spindle is free.
	6. Slide arm spindle (167) bent.	6. Straighten or replace.
Turntable does not rotate, or rotates unevenly at 78 rpm.	1. Top of slide arm spindle (167) and idler wheel (33) coming into contact.	1. Adjust so that idler wheel (33) clears top of spindle when operating at 78 rpm.
No reproduction or sound when changer is operating.	1. Pickup muting switch (155) short circuited.	1. Bend contacts of muting switch for a .010-.025" clearance between contacts when changer is in play position.
Pickup fails to track correctly.	1. Pickup lead trapped or tight.	1. Free pickup lead and make sure it has sufficient slack when connected to muting switch or terminal board.
	2. Cam following pin touches bottom of cam groove.	2. Adjust pin away from cam by turning screw (109) clockwise. Do not give too much clearance, otherwise follower pin may jump out of cam groove while cam is rotating in cycle.
	3. Striker feed lever (127) rests on subplate.	3. Striker feed lever must be free on its pivot and should contact subplate at forward end under striker arm (119). At same time, it should be clear of subplate at rear by about 1/16". Should clearance at rear be insufficient, it may be increased by inserting a screwdriver between lever and plate and exerting a slight upward pressure.
	4. Chipped or damaged pickup stylus.	4. Replace.
Changer jammed.	1. Pickup positioning lever (106) jumped out of its track and fell into one of the holes in cam.	1. Lift pickup positioning lever (106) out of hole with a screwdriver and turn cam gear clockwise.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	3913	Record Balancing Arm Moulding
2	4205	Balancing Arm Lift Clip
3	1048	Weight Securing Screw
4	5475	Pickup Arm (State Color)
5	5284	Stylus Pressure Adjusting Screw
6		Washer
7	4973	Mounting Plate
8	5596	Stylus Pressure Adjusting Spring
9	2649	6 B.A. Speed Nut
10	4993	Counterweight
11	1251	4 B.A. Nut
12	5131	Turntable Retaining Clip
13	5093	Lead Retaining Clip
14	3834	Lead Retaining Clip
15	1304	6 B.A. Washer
16	1196	6 B.A. x 3/16" Screw
17	4975	Height Adjusting Lock Spring
18	4974	Height Adjusting Screw
19	5000	Lift Cantilever
20	4999	Horizontal Pivot Retaining Spring
21	4986	Horizontal Pivot Pin
22	5001	Mounting Bracket
23	2608	Pickup Swivel Screw (2)
24	5131	Circlip, 7/16" Dia.
25	5328	Pickup Lift Spindle
26	5336	Tube and Nut Ass'y.
27	5334	Fluon Washer
28	3574	Turntable Cover (Maroon)
	4368	Turntable Cover (Black)
	4369	Turntable Cover (Cream)
29	4407	Turntable Ass'y.
30		Part of Turntable Ass'y.
31	126	8 B. A. x 1/8" Screw (Idler Pulley)
32	2473	5/32" Fibre Washer
33	3199	Idler Pulley Ass'y.
34		C Washer
35	4542	Idler Withdrawal Link
37	2473	5/32" Fibre Washer
38		C Washer
40	3631	6 B.A. x 1/4" Screw (2)
41	5102	Drive Pulley Ass'y. (50-Cycle)
	5280	Drive Pulley Ass'y. (60-Cycle)
42	5202	Balancing Arm Column Ass'y.
43	5094	Pickup Rest Clip
44	3991	Pickup Rest
45	1650	No. 6 x 3/8" S/T Screw
46	2871	C Washer, 3/16"
47		Collaro Conquest Decal
48		Motor Mounting Screws (3)
49	2649	6 B.A. Speed Nut
50	4432	Speed Control Knob Ass'y.
51		C Washer
52	4642	Manual Control Lever Ass'y.
53		Play Decal
54		Housing and Bushing Ass'y.
		Mounting Screws
55	1650	No. 6 x 3/8" S/T Spindle
		Retaining Screws
56	3957	Start-Stop-Reject Knob
57	2839	C Washer
58	5181	Unit Plate Ass'y. (State Color)
59		Spacer
60		Hexagon Nut
61		Changer Mounting Bolts
63	5170	Switch Link Contact Ass'y.
64	2996	Switch Base
65	4237	Switch Contact
66	158	Switch Cover

Ref. No.	Part No.	Description
67	4900	6 B.A. x 1/2" Countersunk Screw (Switch Cover)
68	3409	Switch Base Screw
69	5171	Speed Control Lever/Spindle Ass'y.
70	3664	Speed Control Link
71		C Washer
72		Manual Operating Link Roller
73	5192	Manual Operating Link Ass'y.
74	5111	Manual Control Link
75	5145	Manual Control Link Spring
76	2052	Support Bracket
77	5191	Switch Control Lever Ass'y.
78		C Washer
79		C Washer
80	3894	Turntable Thrust Washer
81	2884	Turntable Thrust Ball Cage Ass'y.
82	5096	Damper Washer
83	3144	Damper Washer
84	2825	Spindle Locating Screw
85		Cotter Key
86	4491	Selector Pawl Ass'y.
87	4490	Record Spindle/Slide Ass'y.
88	5255	No. 6 x 3/8" S/T Screw
89	5261	Turntable Spigot Housing/ Spindle Ass'y.
90	5231	Control Switch-Off Lever
91		C Washer
92	5114	Control Switch Off Lever
93	5143	Control Lever Spring
94		Washer
95		Pickup Rest Mounting Screw
96	5168	Control Plate/Spindle Ass'y.
97	5337	Housing/Bushing Ass'y.
98		Washer
99		Washer
100	5131	C Washer 7/16" Dia.
101	3894	Thrust Washers
102	2884	Ball Race
103		Compression Spring
104		Washer
105	4998	Self-Locking Nut
106	5343	Pickup Positioning Lever
107	5013	3/32" Dia. Ball Bearing
108	5329	Friction Washer
109	2278	6 B.A. x 3/8" Screw
110	5593	Felt Washer
111	5339	Automatic Stop Feed Lever Ass'y.
112	5335	Hex Bolt
114	5597	1/4" Dia. Grip Ring
115	5134	Eccentric Roller
116	5270	Cam Gear Ass'y.
117		C Washer
118		Washer
119	5183	Striker Arm Ass'y.
120	5157	5/32" C Washer
121		Washer
122	5242	Intermediate Gear Bracket Ass'y.
123	5154	Drive Pinion
124	5286	Cam Gear Spring Blade
125	5197	Gear Lever Link Ass'y.
126		C Washer
127	5117	Striker Feed Lever
128	5269	Intermediate Gear
129		Washer
130	5148	Cam Gear Spindle
131	134	2 B.A. Hexagon Nut
132	3785	2 B.A. Shakeproof Terminal
133	1251	4 B.A. Hexagon Nut

Ref No.	Part No.	Description
134	3638	Compression Spring (Height Adjustment)
135		Compression Spring
136		Collar
137		Collar
138	1276	4 B. A. Self-Locking Nut
139		Hex Nut
140	5594	Selector Pawl Stop
141		Washer
142	1276	4 B. A. Self-Locking Nut
143	5442	Tension Spring (Gear Lever Link)
144		C Washer
145	5113	Cam Gear Locating Roller
146	5598	Cable Clip
147	5243	Subplate Ass'y.
148		Screw (2)
149	5172	Record Dropping Slide Ass'y.
150	5098	Pawl Adjusting Plate
151		Washers.
152	1979	6 B. A. x 1/ 8" Screw
153	2840	Spindle Pawl Return Spring
154	5141	Pickup Lift Lever Spring
155	5246	Muting Contact Ass'y
156	5255	No. 6 x 3/ 8" S/ T Screw
157	5344	Pickup Lift Lever
158	2649	6 B. A. Speed Nut
159		Spring
160	5345	Pickup Lift Lever Extension
161		Washer
162	2063	Pickup Height Adjusting Screw
163		Motor

Ref. No.	Part No.	Description
164	4389	Pulley, 50-Cycle, Red
	4390	Pulley, 50-Cycle, Blue
	4391	Pulley, 50-Cycle, Green
	4392	Pulley, 50-Cycle, Yellow
	5304	Pulley, 50-Cycle, Black
	4393	Pulley, 60-Cycle, Red
	4394	Pulley, 60-Cycle, Blue
	4395	Pulley, 60-Cycle, Green
	4396	Pulley, 60-Cycle, Yellow
	5445	Pulley, 60-Cycle, Black
165	3104	Compression Spring
166	4429	Fan Ass'y.
167	4401	Slide Arm Spindle
168	4927	Idler Swivel Arm Ass'y.
169	1298	Set Screw
170	4401	Idler Slide Arm Spindle
171	4403	Idler Slide Arm Ass'y.
172		Motor
173	4796	Idler Tension Spring
174	800	Screw
175	4400	Lift Collar
176	4387	Four-Speed Cam
177	1276	4 B. A. Self-Locking Nut
178	4674	Tension Spring (Cam Roller)
179	3020	Compression Spring
180	3392	Cam Lever
181	2870	C Washer
182	4404	Idler Withdrawal Lever Ass'y.
183	4234	Screw
184	4798	Cam Locating Roller

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*TRADE MARK
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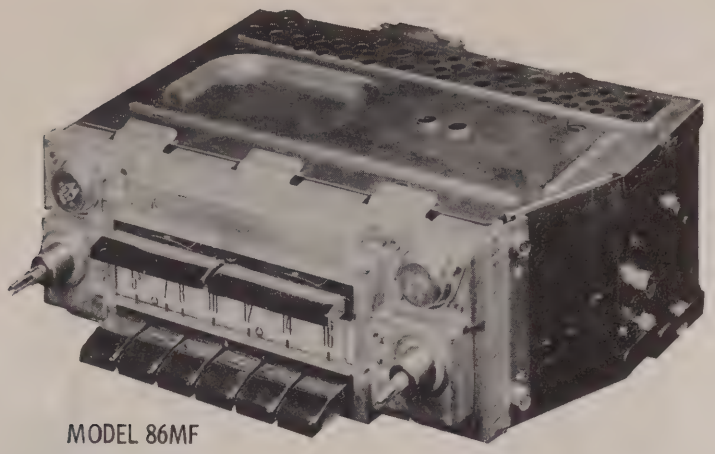
FORD MODELS 76MF (SR) (B7A-18805-B1), 86MF (B8A-18805-A)

FORD MODELS 76MF (SR) (B7A-18805-B1), 86MF (B8A-18805-A)



MODEL 86MF

TRADE NAME	Ford Models 76MF(SR)(B7A-18805-B1) For 1957 Ford Automobiles, 86MF(B8A-18805-A) For 1958 Ford Automobiles
MANUFACTURER	Motorola, Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output
TUBES (Six)	Types 12EG6 RF Amplifier, 12AD6 Converter, 12BL6 1st. IF Amplifier, 12BL6 2nd. IF Amplifier, 12DL8 Det.-AVC-AF Amp., 12AL8 Trigger-Relay Control
POWER SUPPLY	12 Volt Storage Battery — RATING 2.2 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540-1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400∿ Mod)	High Freq. end stop	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	"	"	"	A4	Adjust for MINIMUM deflection.
3.	Fig. 1	Thru dummy to antenna receptacle	1610KC	"	"	A5, A6, A7	Adjust for maximum deflection.
	Steps 4 and 5 are not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) 1 3/8" out of coils. A tool similar to Fig. 2 may be used.						
4.	Fig. 1	Thru dummy to ant. receptacle.	1610KC	High Freq. end stop.	DC probe to point Ⓐ. Common to chassis.	A5, A6, A7	Adjust for maximum deflection.
5.	"	"	1020KC	49/64" from High Freq. end stop.	"	A8, A9, A10	Adjust for maximum deflection. Repeat steps 4 and 5.
6.	"	"	1925KC	1400KC	"	A11	Adjust for MINIMUM deflection.
7.	"	"	1000KC @ 5 Microvolts	Tune to 1000KC signal	Output meter across voice coil	R4	Volume at maximum. Adjust for 1.79 volts.
8.	"	"	1000KC @ 100 Microvolts	"	"	R3	Turn set off. Press and release town search button. Short contact C of relay M8 to ground. Turn set on and adjust R3 for 1.79V.
9.	With radio installed in car and antenna fully extended, tune in a weak station near 1200KC and adjust A7 for maximum output.						

POINTER ADJUSTMENT

With radio tuned to a 1000KC signal adjust pointer adjustment so that pointer coincides with 1000KC marker on dial.

NOTE: ALIGNMENT FIG 1 AND FIG 2 ARE LOCATED AT END OF PARTS LIST.
PUSHBUTTON ADJUSTMENT IS LOCATED AT END OF PARTS LIST.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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H560

SET 408 FOLDER 7

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12EG6	
V2	Converter	12AD6	
V3	1st. IF Amp.	12BL6	
V4	2nd. IF Amp.	12BL6	
V5	Det.-AVC-AF Amp.	12DL8	
V6	Trigger-Relay Control	12AL8	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N176	Output	CBS-2N155	2N176		2N176	
X2	2N176	Output	CBS-2N155	2N176		2N176	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	100	16	23B542329	AFH3-00-90		WP300.5			R2634 *
B	■400	16							
C	▲100	16							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	20-180		20K539683						
C3	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C4	.05	200	8R121005	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C5	3.9		21R115953						10%
C6	.05	200	8R121005	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C7A	120-210		〈 20K542318						
B	47								
C	50-260								
C8	100		21R124032						N220 5%
C9	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C10	220		21K121698		MD-221	L10T22		5GA-T22	10%
C11	2.7		21R115950						10%
C12	100		21R410036	N750-D1 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750 10%
C13	1500		21R125986	BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C14	560		21R120936	BPD-00056	DD-561	L10T56	UC-5356	5GA-T56	
C15	100		21R120576	N750-D1 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750 10%
C16	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C17	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C18			64A530176						
C19			64A530176						

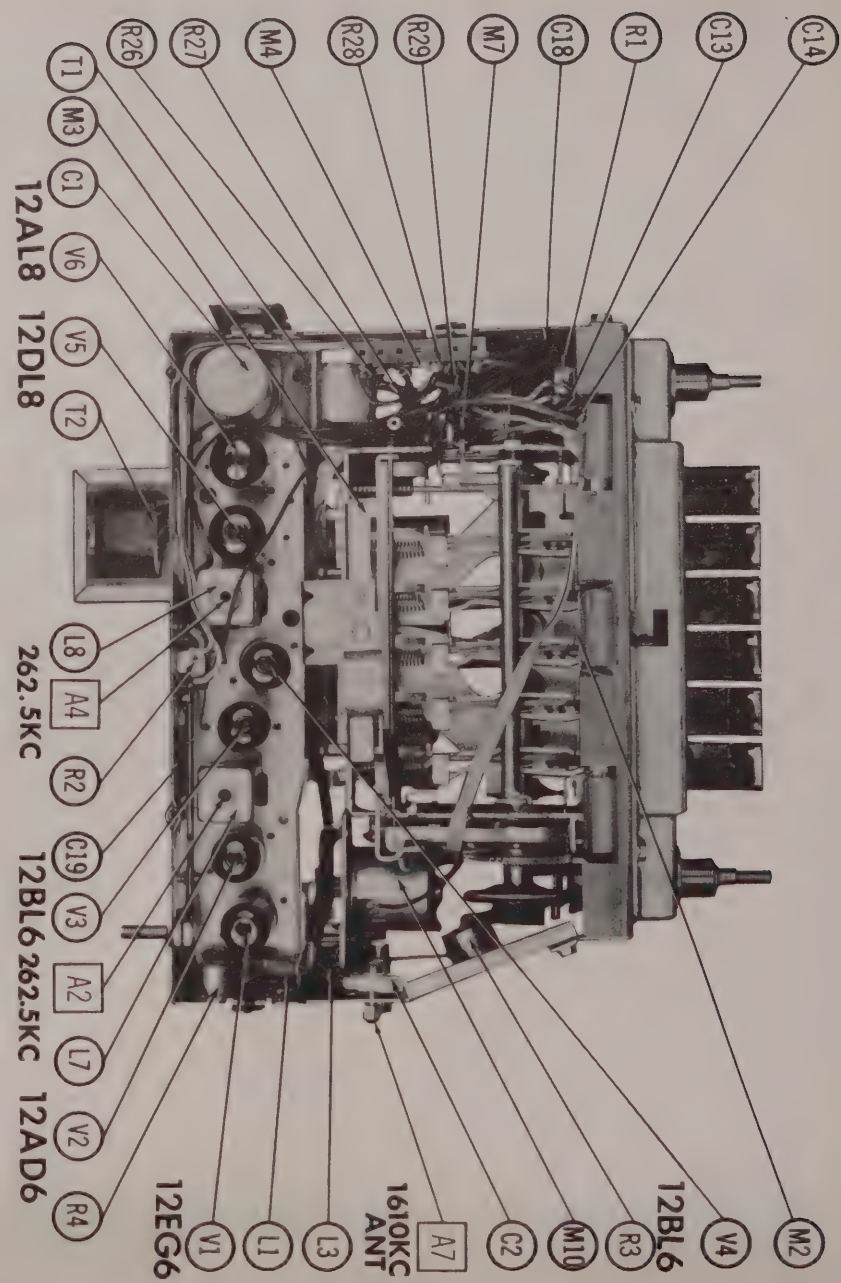
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	4meg	½	18K542373	F1-82		〈♦ QJ-1091A	〈♦♦ UE3819	Tone
B	2meg	½		R2-72				Volume, Tap ② 1meg
R2	400Ω	1(WW)	18B541877					Balance
R3	500Ω	1(WW)	18K542317					Sensitivity (Town)
R4	2000Ω	1(WW)	18K520298		39-2000-100			Sensitivity (Normal) with 100Ω stop

♦ "Concentrikit" Equivalent : K-15 Kit, Base Elements & Shafts B11-141, P14-118 (Panel) B18-139X, R1-130 (Rear)

♦♦ "STA-LOC" Equivalent : FB46L, OS1562, RU26T16, IS2000

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MOTOROLA PART No.	NOTES
R5	6.8meg		6K122321	
R6	1.5meg		6R3966	
R7	1meg		6K122324	
R8	12K		6K119933	
R9	5.6meg		6R3988	
R10	4.7meg		6K122326	
R11	47K		6K121687	
R12	22K		6K119405	
R13	4700Ω		6R6039	
R14	6.8meg		6K122321	
R15	120Ω		6R5551	
R16	47K		6K121687	
R17	2.2meg		6R3927	
R18	180K		6K125531	
R19	680K		6R6475	
R20	8.2meg		6R5585	
R21	1.5meg		6R3966	
R22	4.7meg		6K122326	
R23	3300Ω		6R6036	
R24	10meg		6K119408	
R25	10Ω		6R118245	
R26	.33Ω		17K542316	
R27	7.5Ω Cold		6K542314	
R28	.33Ω		17K542316	
R29	7.5Ω Cold		6K542314	
R30	330Ω		6R6010	
R31	330Ω		6R6010	
R32	10Ω		6R118245	

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	5.5 :	1 SEC. 2	25C542302						
	5.5 :	1							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	31Ω CT	3-4Ω	25C541999							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	6" x 9"	PM	3-4Ω	50D538018	69A3	

COILS (RF-IF)

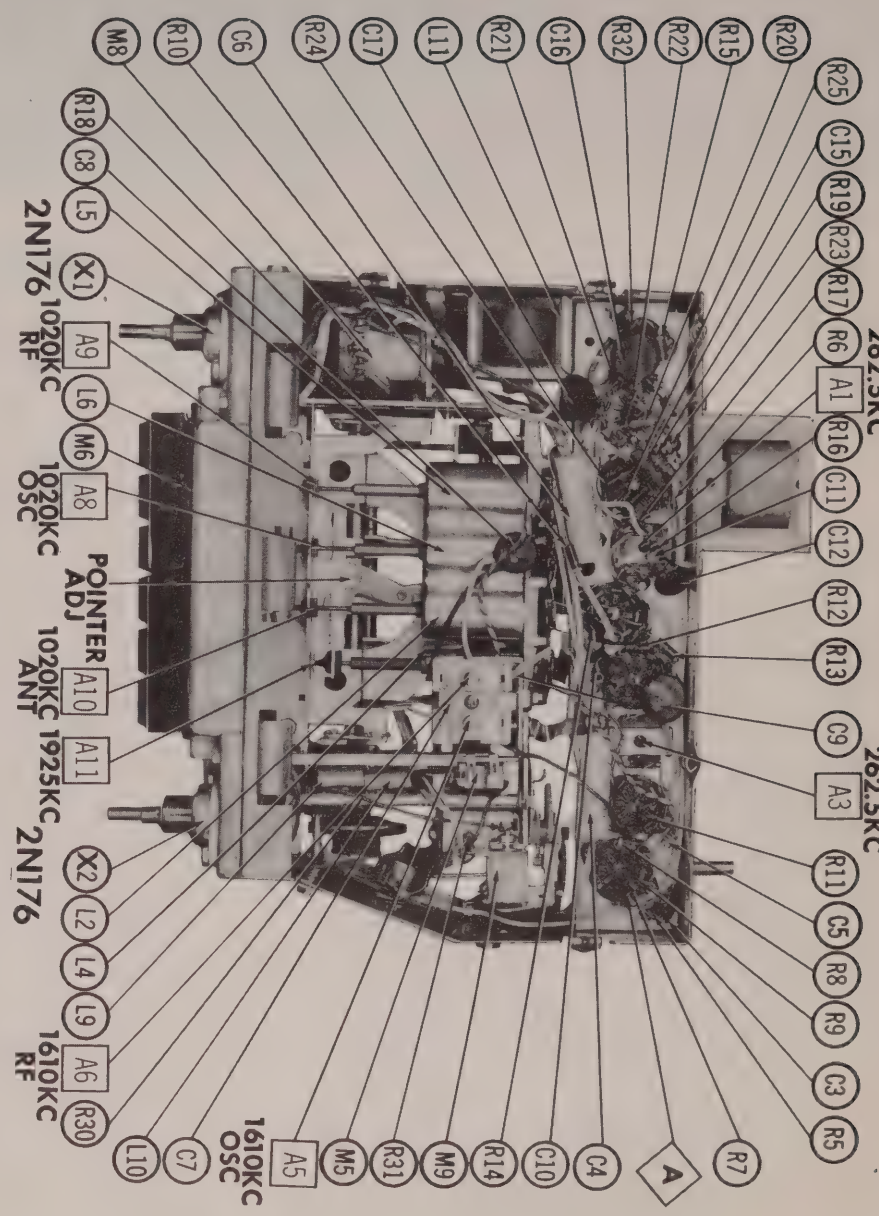
ITEM No.	USE	REPLACEMENT DATA MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coupling Coil	24K791446	19-1005	BC-566	4622		10 Microhenries, IRC Part #CL-1, Note 1
L2	Ant. Coil	24C536308					Note 2
L3	RF Choke	24A532148	19-6033				31 Microhenries
L4	IF Trap Coil	24K542330					Note 2
L5	RF Coil	24C536308					Note 2
L6	Osc. Coil	24B536300					Note 2
L7	Input IF	24K542374	16-6752	BC-350	12-H1	RF-3	
L8	Output IF	24B533073					
L9	Drive Motor Choke	24A542379					3.2 Microhenries
L10	Drive Motor Choke	24A542379					3.2 Microhenries

Note 1. Used in Model 86MF only.
Note 2. Part of M3.

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L11	2A	.3Ω	.0045 Hy.	25C542312						

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½A 32V	65R122346	9K560762	30707.5 (7AG-7½A-32V)	155009	SFE 7½	HDH

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Lamp	65R533821	#1891
M3	Tuner	77E541960	ST-222, Complete
M4	Spark Plate	48A539147	Selenium Type (Use #43A539259 Bushing, #5K124633 Eyelet and #4A540423 Washer for Mounting)
	Spark Plate	48K539953	Selenium Type (Use #43A539954 Bushing, #5K124848 Eyelet and #4A542137 Washer for Mounting)
M5	Switch	40B535396	Motor Reversing
M6	Switch	1V542282	Search Selector and Button Assy.
M7	Switch	40A536283	Power On-Off
M8	Relay	1V540128	
M9	Solenoid	59A537563	
M10	Motor	59C540838	Tuner Drive, Incl. Drive Gear

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36K541850	Volume and Tuning, Model 86MF
Knob	36B539476	Tone and Dummy
Knob	36B539472	Volume and Tuning, Model 76MF(SR)
Pushbutton	1B539242	5 Used
Pushbutton	1K539243	Off
Cover	15C539071	Wiring Side
Cover	15K539596	Tube Side
Pointer	1A538977	
Dial Scale	34K541831	Model 86MF
Dial Scale	34C539063	Model 76MF (SR)

PARTS LIST AND DESCRIPTIONS (Continued)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

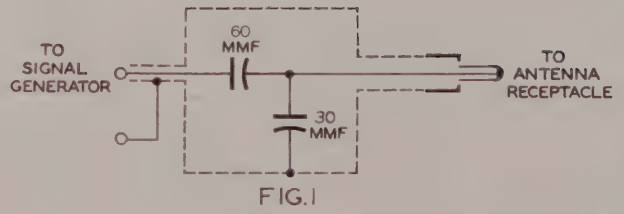


FIG. 1

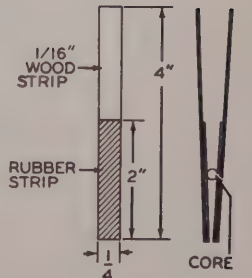
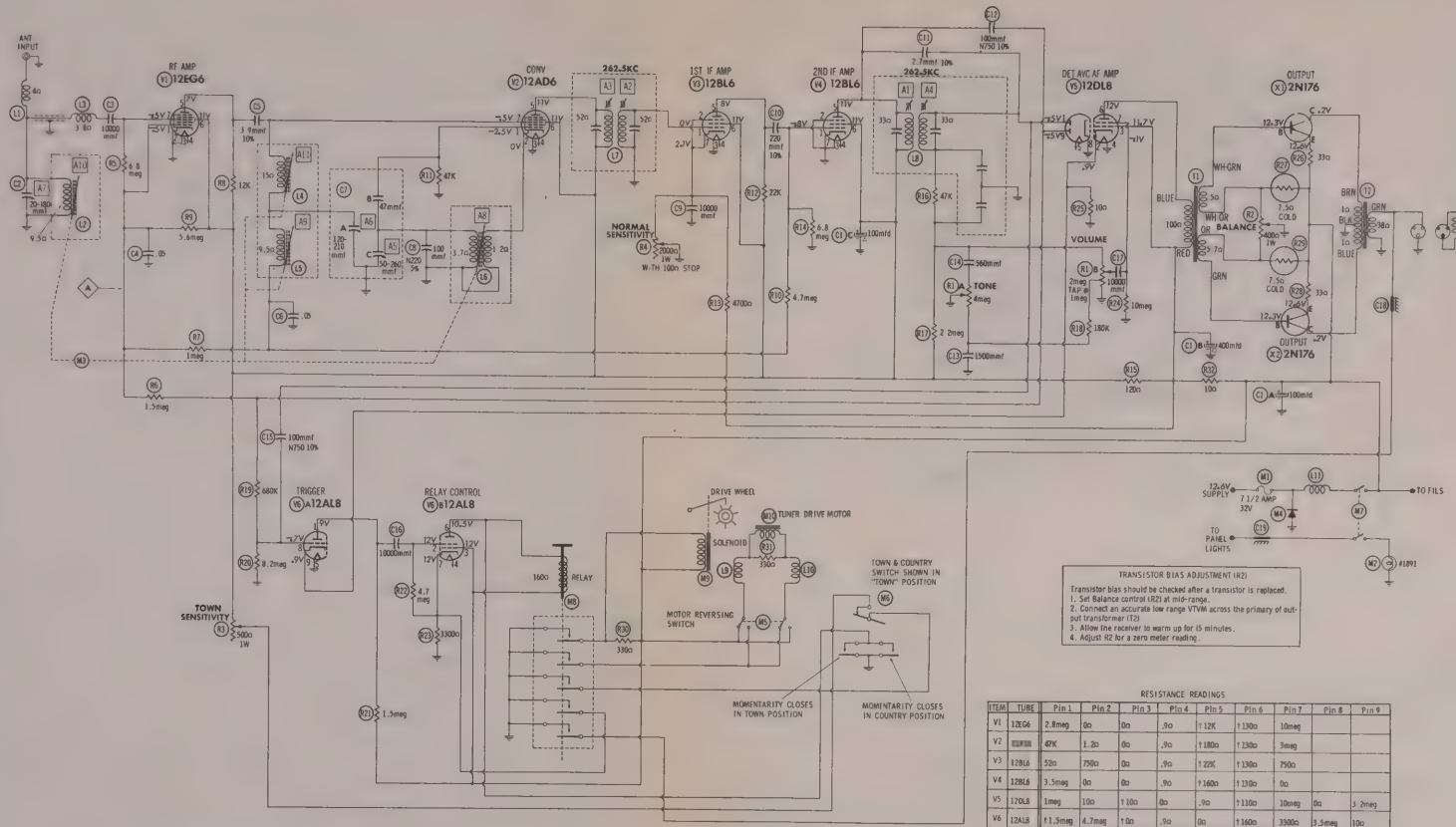


FIG. 2



TRANSISTOR BIAS ADJUSTMENT (R2)

Transistor bias should be checked after a transistor is replaced.
1. Set Balance control (R2) at mid-range.
2. Connect an accurate low range VTVM across the primary of output transformer (T2)
3. Allow the receiver to warm up for (5 minutes.
4. Adjust R2 for a zero meter reading.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12EG6	2.8meg	0Ω	0Ω	.9Ω	†12K	†130Ω	10meg		
V2	[illegible]	47K	1.2Ω	0Ω	.9Ω	†180Ω	†130Ω	3meg		
V3	12BL6	52Ω	750Ω	0Ω	.9Ω	†22K	†130Ω	750Ω		
V4	12BL6	3.5meg	0Ω	0Ω	.9Ω	†160Ω	†130Ω	0Ω		
V5	12DL8	1meg	10Ω	†10Ω	0Ω	.9Ω	†110Ω	10meg	0Ω	3.2meg
V6	12AL8	†1.5meg	4.7meg	†0Ω	.9Ω	0Ω	†160Ω	3300Ω	3.5meg	10Ω

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE
† MEASURED FROM JUNCTION OF C1A AND R32.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

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GRUNDIG MAJESTIC MODELS 1070, 1088

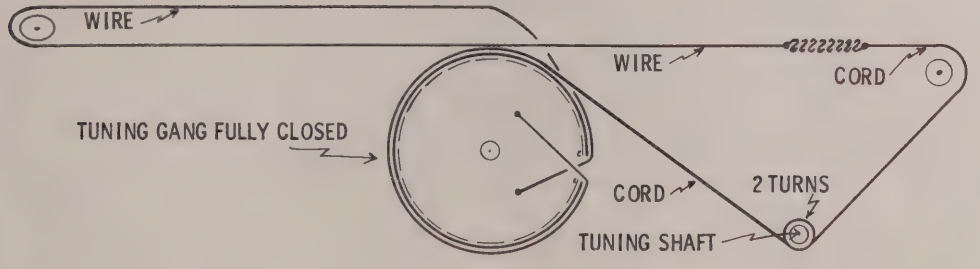
GRUNDIG MAJESTIC
MODELS 1070, 1088

MODEL 1070

GRUNDIG MAJESTIC
MODELS 1070, 1088

TRADE NAME	Grundig Majestic Models 1070, 1088	
SUPPLIER	Majestic International Sales Corp., 743 W. La Salle St., Chicago 10, Illinois	
TYPE SET	AC Operated FM-BC-SW Receiver	
TUBES (Six)	Types 6AQ8/ECC85 FM RF Amp.-FM Conv., 6AJ8/ECH81 1st FM IF Amp.-AM Mixer-AM Osc. 6DA6/EF89 2nd FM-1st AM IF Amp., 6T8/EABC80 Ratio Det.-AM Det.-AVC-AF Amp., EM84 Tuning Indicator, 6BQ5/EL84 Output.	
POWER SUPPLY	110-120 (or 220) Volts AC-60 Cycle	RATING .47A@117 Volts AC (46 Watts)
		SHORT WAVE 5.9 - 15.8MC
TUNING RANGE—BROADCAST	510-1620KC	FREQ. MOD. 88-108MC

DIAL CORD STRINGING



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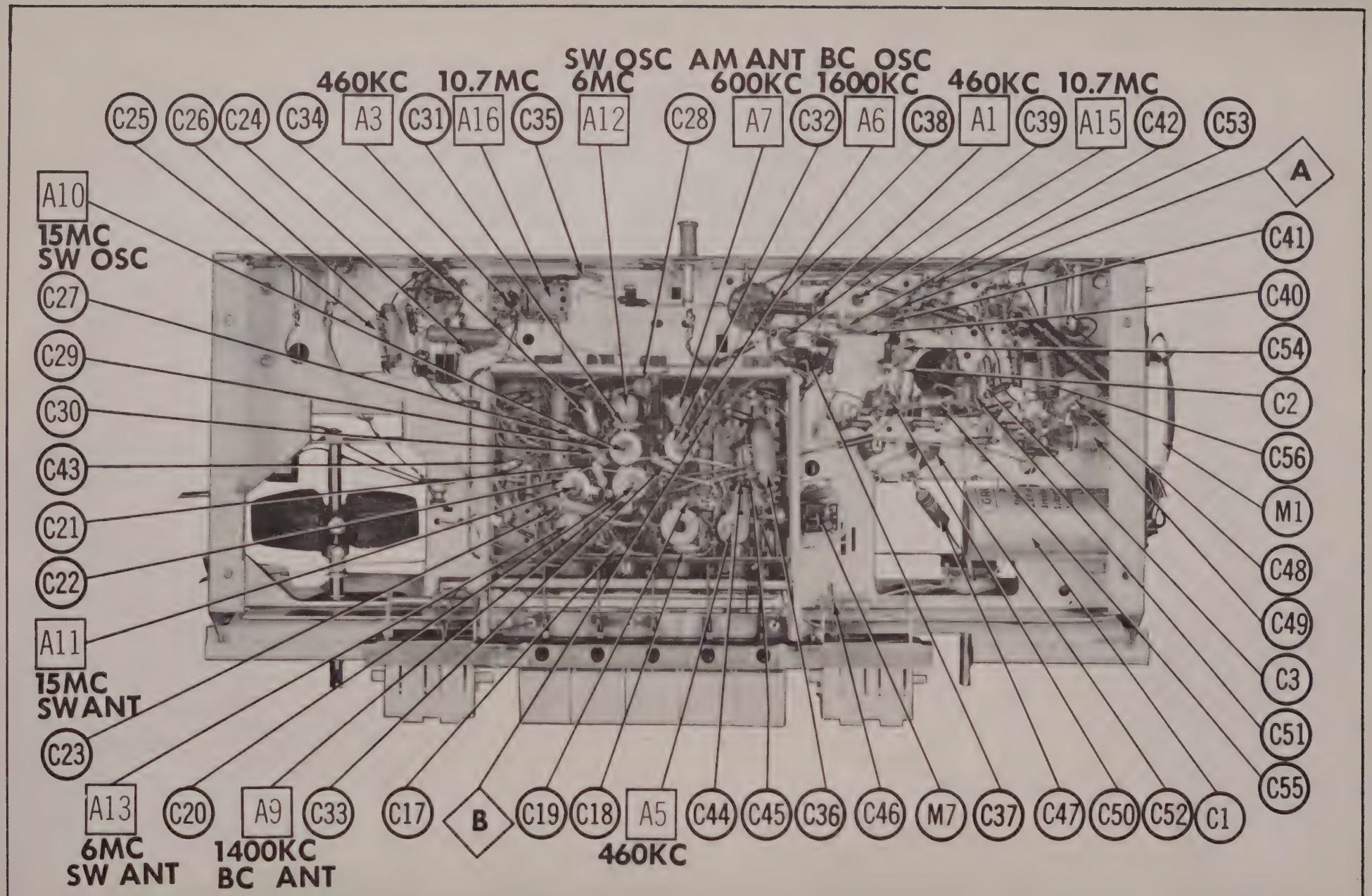
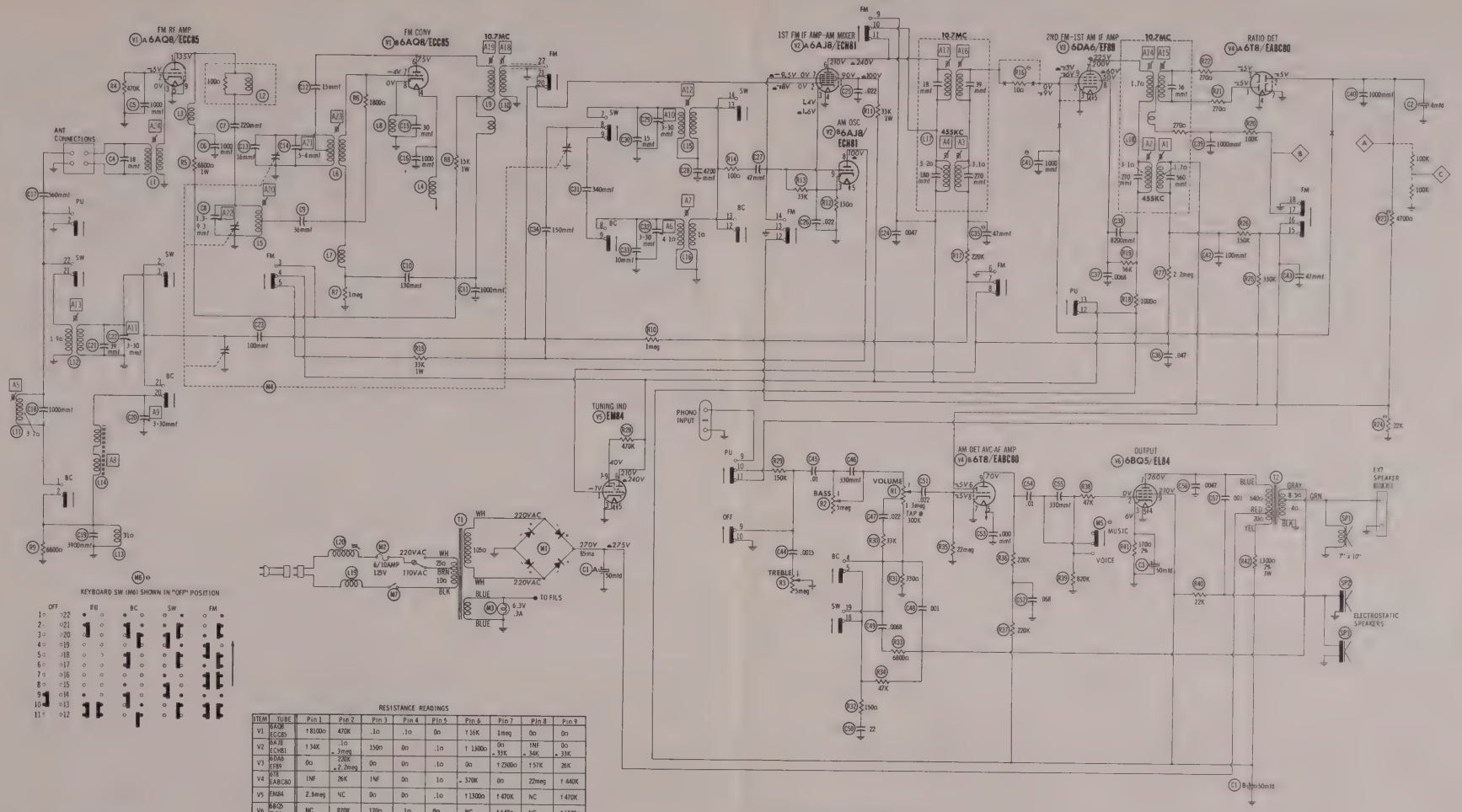
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H460

SET 408 FOLDER 8



CHASSIS BOTTOM VIEW - ALIGN, CAPACITOR & MISC IDENT



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AQ8 ECC85	↑8100Ω	470K	.1Ω	.1Ω	0Ω	↑16K	1meg	0Ω	0Ω
V2	6AJ8 ECH81	↑34K	.1Ω + 3meg	150Ω	0Ω	.1Ω	↑ 1300Ω	0Ω + 33K	INF + 34K	0Ω + 33K
V3	6DA6 EF89	0Ω	220K + 2.2meg	0Ω	0Ω	.1Ω	0Ω	↑2300Ω	↑57K	26K
V4	6T8 EABC80	INF	26K	INF	0Ω	.1Ω	+ 370K	0Ω	22meg	↑ 640K
V5	EM84	2.6meg	NC	0Ω	0Ω	.1Ω	↑13000Ω	↑470K	NC	↑470K
V6	6BQ5 EL84	NC	870K	170Ω	.1Ω	0Ω	NC	↑640Ω	NC	↑1300Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
+ MEASURED IN "AM" POSITION
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

408-8

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 2 (grid) of 6AJ8/ECH81 (V2). Low side to chassis.	460KC (400~ Mod.)	BC	Tuning gang fully open.	Across Voice Coil	A1, A2, A3, A4,	Adjust for maximum deflection.
2.	"	High side to AM Ant. terminal. Low side to chassis.	"	"	"	"	A5	Adjust for MINIMUM deflection.
3.	"	Loop	1600KC	"	1600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.	"	"	600KC	"	Tune to 600KC signal.	"	A7, A8	"
5.	"	"	1400KC	"	1400KC	"	A9	"
6.	200mmf	High side to AM Ant. receptacle. Low side to chassis.	15MC	SW	15MC	"	A10, A11	Adjust for maximum deflection.
7.	"	"	6MC	"	6MC	"	A12, A13	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	200mmf	Highside to pin 2 (grid) of 6DA6/EF89 (V3). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC Probe to point Ⓐ. Common to chassis.	A14	Adjust for maximum deflection.
9.	"	"	"	"	"	DC Probe to point Ⓒ. Common to point Ⓑ.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
10.	"	High side to pin 2 (grid) of 6AQ8/ECC85 (V1). Low side to chassis.	"	"	"	DC Probe to point Ⓐ. Common to chassis.	A16, A17 A18, A19 A20	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
8.	200mmf	High side to pin 2 (grid) of 6DA6/EF89 (V3). Low side to chassis.	10.7MC (450KC SWP)	FM	Point of non-interference	Vert. Amp. to point Ⓐ, Low side to chassis.	A14	Disconnect stabilizing capacitor C2 Adjust for curve of maximum amplitude and symmetry similar to Fig. 1
9.	"	"	"	"	"	Vert. Amp. to point Ⓑ, Low side to chassis.	A15	Reconnect C2. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2 SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.
10.	"	High side to pin 2 (grid) of 6AQ8/ECC83 (V1). Low side to chassis.	"	"	"	Vert. Amp. to point Ⓐ. Low side to chassis,	A16, A17 A18, A19 A20	Disconnect C2 Adjust for curve of maximum amplitude and symmetry similar to Fig. 1 Reconnect C2.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
11.	270Ω Carbon Resistors	Thru 270Ω res. each side to FM Ant. terminals.	105MC	FM	105MC	DC Probe to point Ⓐ, Common to chassis.	A21, A22	Adjust for maximum deflection.
12.	"	"	90MC	"	90MC	"	A23, A24	"

FIG. 1

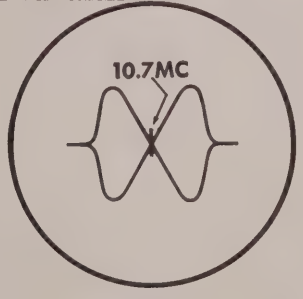
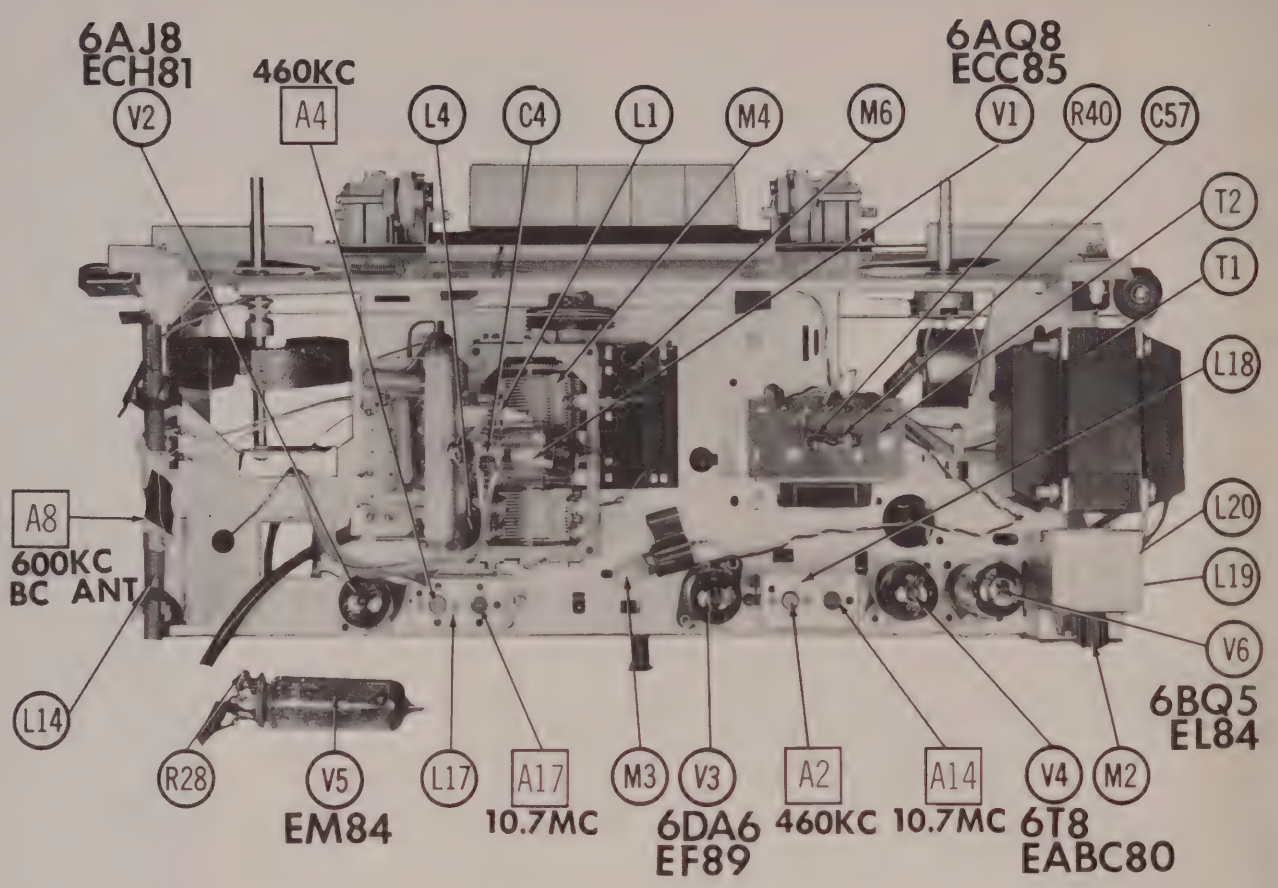
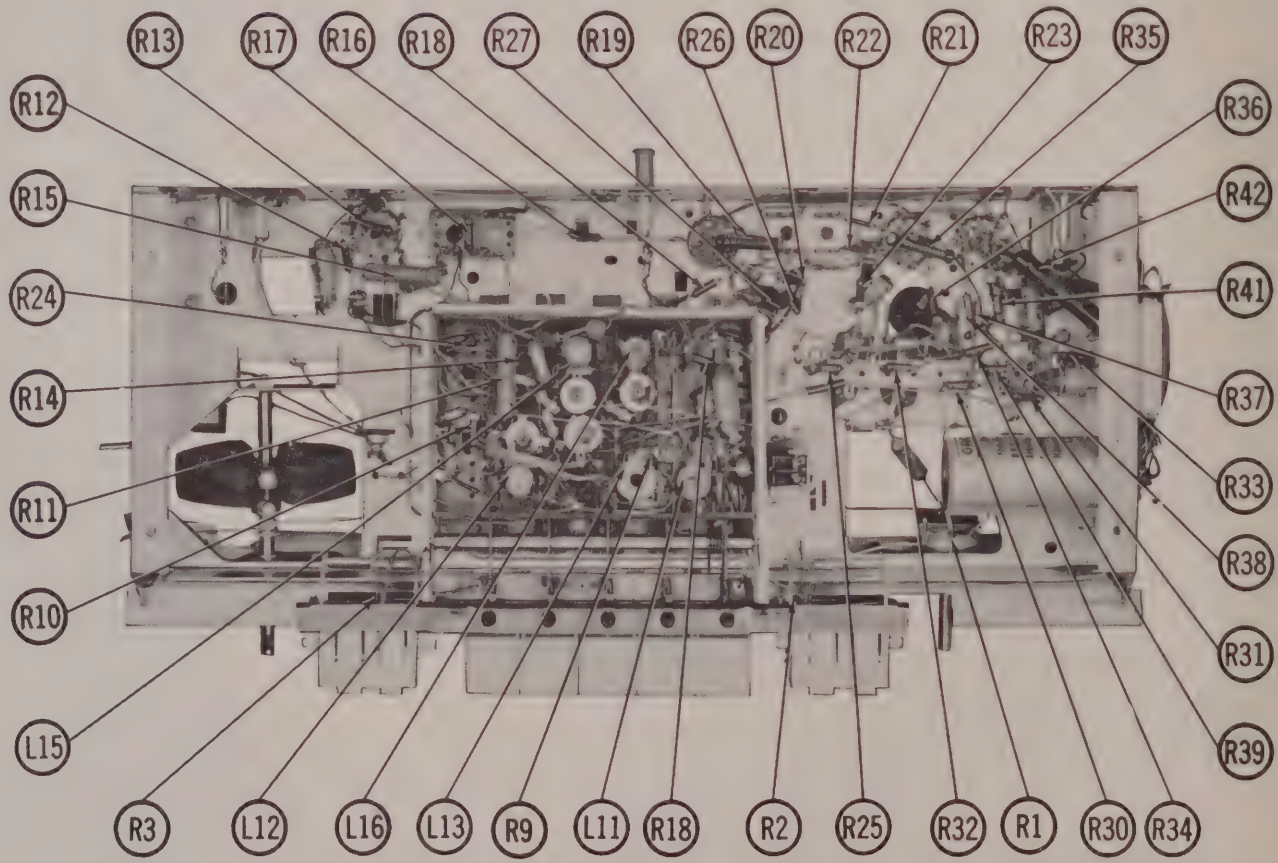


FIG. 2

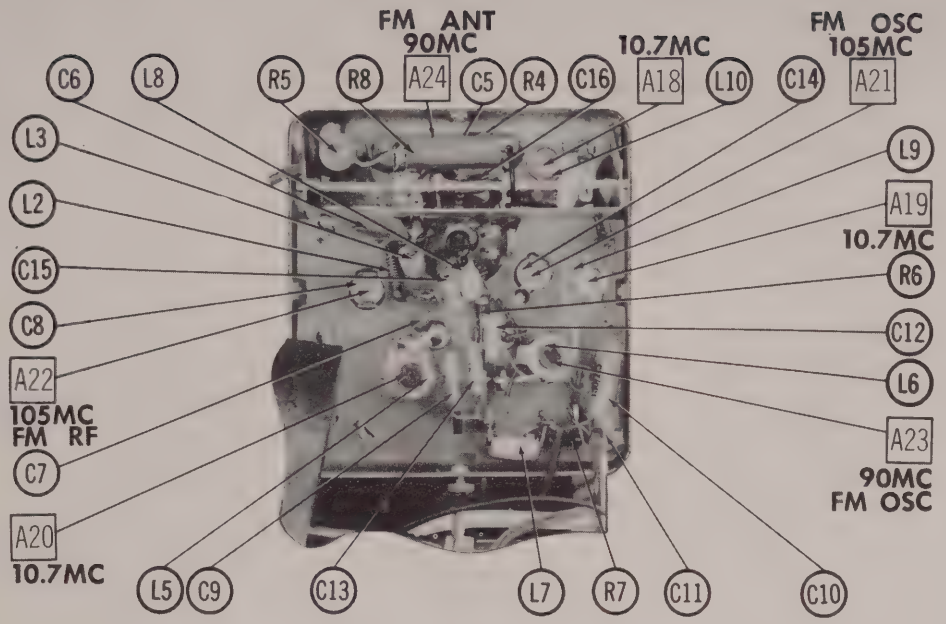


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

FM RF SUB CHASSIS



PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	6AQ8/ ECC85
V2	1st FM IF Amp. -AM Mixer-AM Osc.	6AJ8/ ECH81
V3	2nd FM-1st AM IF Amp.	6DA6/ EF89
V4	Ratio Det. -AM Det. -AVC-AF Amp.	6T8/ EABC80
V5	Tuning Indicator	EM84
V6	Output	6BQ5/ EL84

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Grundig Majestic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	385						S-275	R2582*
B	50	385						MT-4550	
C2	4	80		PRS150V4	BBR4-150	TC40	TD-4-150	MT-1504	TVA-1402
C3	50	15		PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206

* Non Catalog Item

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Grundig Majestic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	18			SI 18	D6-180	LT6Q18	UC-5418	5GA-Q18	
C5	1000			BPD-001	DD-102	L10D1	DC521	5HK-D1	
C6	1000			BPD-001	DD-102	L10D1	DC521	5HK-D1	
C7	220			DI-220	DD-221	L10T22	UC-5322	5GA-T22	
C8	1.3-9.3								
C9	36				TCZ-36	CTA6Q36C			
C10	130			1468-00013	DD-131	5W5T13		1FM-313	
C11	1000			1468-001	DD-102	5W5T1	MC255	1FM-21	
C12	15			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C13	16								
C14	.5-4								
C15	30			SI 30	DD-300	CTA6Q3C		5GA-Q3	
C16	1000			BPD-001	DD-102	L10D1	DC521	5HK-D1	
C17	560			1468-00056	DD-561	1W5T56		1FM-356	
C18	1000			1468-001	DD-102	1W5D1	MC255	1FM-21	
C19	3900			1467-0039	DD-392	1W5D39		1FM-239	
C20	3-30								
C21	39			SI 39	D6-390	LT6Q39	UC-5439	5GA-Q39	
C22	3-30								
C23	100			1468-0001	DD-101	5W5T1	MC235	1FM-31	
C24	.0047	500		P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C25	.022	500		P688N-022	DD-203	CUB6S22	GEM-6122	6TM-S22	
C26	.022	250		P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C27	47			1468-000047	DD-470	5W5Q47		1FM-447	
C28	4700			1467-0047	DD-472	1W5T47		1FM-247	
C29	3-30								
C30	15			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C31	340								
C32	3-30								
C33	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C34	150			1468-00015	DD-151	5W5T15	MC236	1FM-315	
C35	47			SI 47	D6-470	LT6Q47	UC-5447	5GA-Q47	Note 1.
C36	.047	125		P288N-047	DF-503	CUB4S47	GEM-4147	2TM-S47	
C37	.0068	500		P688N-0068	D6-682	CUB6D68	GEM-6268	6TM-D68	
C38	8200								
C39	1000			BPD-001	DD-102	L10D1	DC521	5HK-D1	
C40	1000			BPD-001	DD-102	L10D1	DC521	5HK-D1	
C41	1000			BPD-001	DD-102	L10D1	DC521	5HK-D1	Note 2.
C42	100			1468-0001	DD-101	5W5T1	MC235	1FM-31	
C43	47			1468-000047	DD-470	5W5Q47		1FM-447	
C44	.0015	125		P288N-0015	D6-152	CUB6D15	GEM-6215	6TM-D15	
C45	.01	125		P288N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C46	330			1468-00033	DD-331	5W5T33		1FM-333	
C47	.022	125		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C48	.001	125		P288N-001	D6-102	CUB6D1	GEM-421	6TM-D1	
C49	.0068	125		P288N-0068	D6-682	CUB6D68	GEM-6268	6TM-D68	
C50	.22	125		P288N-22		CUB2P22	GEM-2022	2TM-P22	
C51	.022	125		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C52	.068	500		P688N-068		CUB4S68	GEM-6168	6TM-S68	
C53	1000			BPD-001	D6-102	BYA10D1M	DC521	5HK-D1	
C54	.01	500		P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C55	330			1468-00033	DD-331	5W5T33		1FM-333	
C56	.0047	500		P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C57	.001	500		P688N-001	D6-102	CUB6D1	GEM-621	6TM-D1	

Note 1. Some versions may use 220mmf in this application.
Note 2. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Grundig Majestic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1.3meg	1/2	7801-146					Volume, Tap@ 300K
R2	5 meg	1/2	7806-149					Bass
R3	5 meg	1/2	7806-148					Treble

GRUNDIG MAJESTIC MODEL 1070

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Grundig Majestic PART No.	NOTES
R4	470K			
R5	6800Ω	1		
R6	1800Ω			
R7	1meg			
R8	15K	1		
R9	6800Ω			
R10	1meg			
R11	33K	1		
R12	150Ω			
R13	33K			
R14	100Ω			
R15	33K	1		
R16	10Ω			Note 1.
R17	220K			
R18	1000Ω			
R19	56K			
R20	100K			
R21	270Ω			
R22	270Ω			
R23	4700Ω			Note 2.
R24	22K			Note 3.
R25	330K			
R26	150K			
R27	2.2meg			
R28	470K			
R29	150K			
R30	33K			
R31	330Ω			
R32	150Ω			
R33	6800Ω			
R34	47K			
R35	22meg			
R36	220K			
R37	220K			
R38	47K			
R39	820K			
R40	22K			
R41	170Ω 2%	(WW)		
R42	1300Ω 2%	3(WW)		

Note 1. Not used in some versions
Note 2. Some versions may use 12K in this application.
Note 3. Some versions may use 15K in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Grundig Majestic PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	220V Tap ⓐ 117V ⓐ .47A	220V ⓐ .080A	6.3V ⓐ 2.6A	9078-015						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.1	REPLACEMENT DATA Grundig Majestic PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6500Ω Tap ⓐ 200Ω	308Ω SEC. 2 3-4Ω	9054-012							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Grundig Majestic PART No.	QUAM PART No.	NOTES
SP1	7" x 10"	PM	3-4Ω	7045-001		
SP2	3" x 3"	ELECTROSTATIC		7082-002		
SP3	3" x 3"	ELECTROSTATIC		7082-002		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Grundig Majestic PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Trans	HFBV 1974/I					
L2	RF Choke	HFBV 1956/I					Wound on 100Ω
L3	RF Choke	HFBV 1975/I	19-1001	BC-562	4604		1.5 Microhenries
L4	Fil. Choke	HFBV 1833	19-1001	BC-562	4604		1.5 Microhenries
L5	FM Mixer Coil	9208-025					
L6	FM Osc. Coil.	9208-024					

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA Grundig Majestic PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L7	RF Choke	HFBV 1976/I					2.85 Microhenries
L8	Cathode Choke	HFBV 1950/I	19-1000	BC-561	4602		1.25 Microhenries
L9	1st FM IF Pri.	HFBV 1977/I					
L10A	Coupling Coil	HFBV 1978/I					
B	1st FM IF Sec.						
L11	IF Trap	9208-057					
L12	SW Ant. Trans.	9232-001					
L13	BC Ant. Coil	9208-001					
L14	Loop Stick	1033-038					
L15	SW Osc. Coil	9232-002					
L16	BC Osc. Coil	HFBV 1681					
L17A	2nd FM IF	7207-308					
B	1st AM IF						
L18A	Ratio Det.	7207-317					
B	2nd AM IF						
L19	Line Choke	9227-004					
L20	Line Choke	9227-005					

RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Grundig Majestic PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.083A	B250C75 ①		61-4037	D-64 ②	① Selenium ② Silicon

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Grundig Majestic PART No. FUSE	Grundig Majestic PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	Slo-Blo	0.6A 125V		9625-057				

MISCELLANEOUS

ITEM No.	PART NAME	Grundig Majestic PART No.	NOTES
M3	Lamp		Indicator, 7V 0.3A.
M4	Tuning Cap.	9653-402	4 gang (AM Sections: Ant. 11-550mmf, Osc. 9-406mmf)
M5	Switch	7612-005	Tone Control Key Board, Model 1070
	Switch	7612-002	Tone Control Key Board, Model 1088
M6	Switch	7415-004	Press Button Block with Coil Set, Model 1070
	Switch	7415-014	Press Button Block with Coil Set, Model 1088
M7	Switch	0290-034	Power On-Off (Toggle Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	1032-115	Model 1070
Dial	1066-115	Model 1088
Knob	9616-501	Large, Lower Part, Model 1070 (two used)
Knob	9616-503	Small, Top Part, Model 1070 (two used)
Knob	9616-526	Large, Lower Part, Model 1088 (two used)
Knob	9616-530	Small, Top Part, Model 1088 (two used)
Press Button	7406-505	Five used
Pointer	1031-053	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

HOFFMAN MODELS B802, M802, SP802, W802, B8002, M8002, SP8002, W8002 (Ch. 1108, 1116)

HOFFMAN MODELS B802, M802, SP802, W802, B8002, M8002, SP8002, W8002 (Ch. 1108, 1116)

MODEL B8002

HOFFMAN MODELS B802, M802, SP802, W802, B8002, M8002, SP8002, W8002 (Ch. 1108, 1116)

TRADE NAME	Hoffman Models B802, B8002, M802, M8002, SP802, SP8002, W802, W8002 (Ch. 1116 Tuner, 1108 Amp.)		
MANUFACTURER	Hoffman Radio Corp., 6200 S. Avalon Blvd., Los Angeles 3, Calif.		
TYPE SET	AC Operated FM-AM Receiver With 4 Speed Automatic Record Changer		
TUBES	Fourteen	RATING	.44 Amp. @ 117 Volts AC (45 Watts) Tuner .67 Amp. @ 117 Volts AC (65 Watts) Amp.
POWER SUPPLY	110-120 Volts AC - 60 Cycles		
TUNING RANGE—BROADCAST	540 - 1620KC	FREQ. MOD.	88 - 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER—SEE SIMILAR GARRARD RC121/4—PHOTOFACT SET 355 FOLDER 4 OR RECORD CHANGER MANUAL RC-10

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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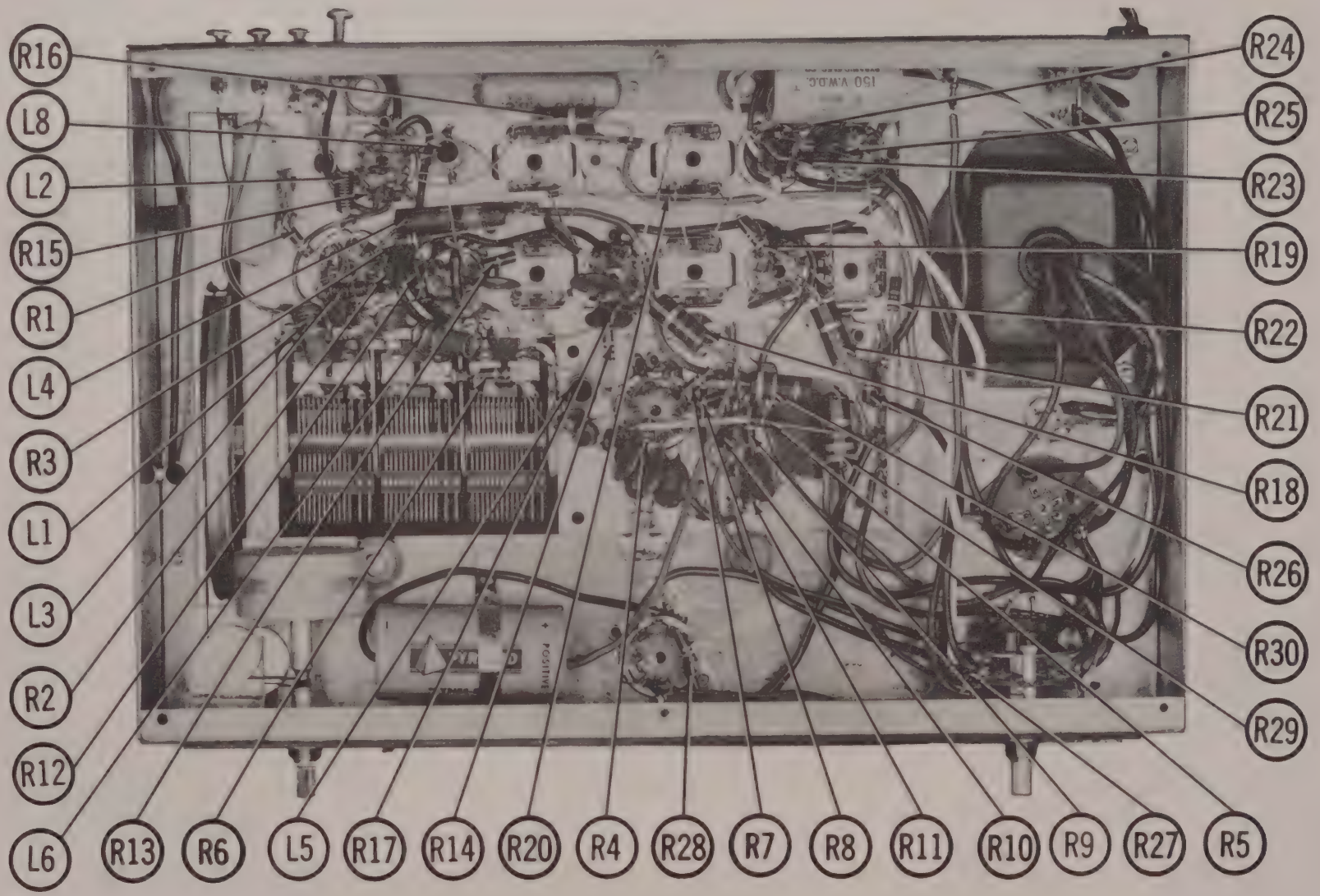
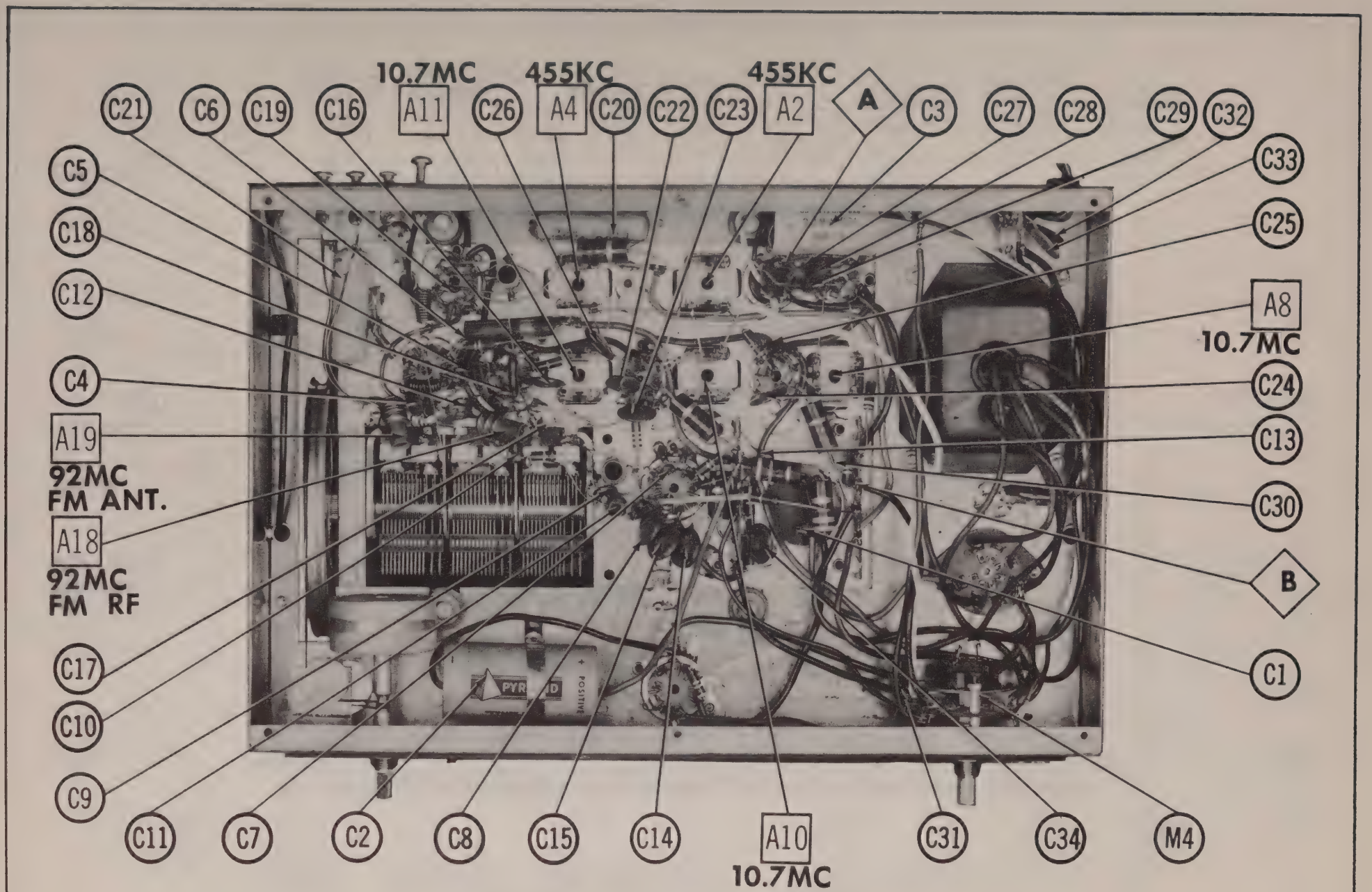


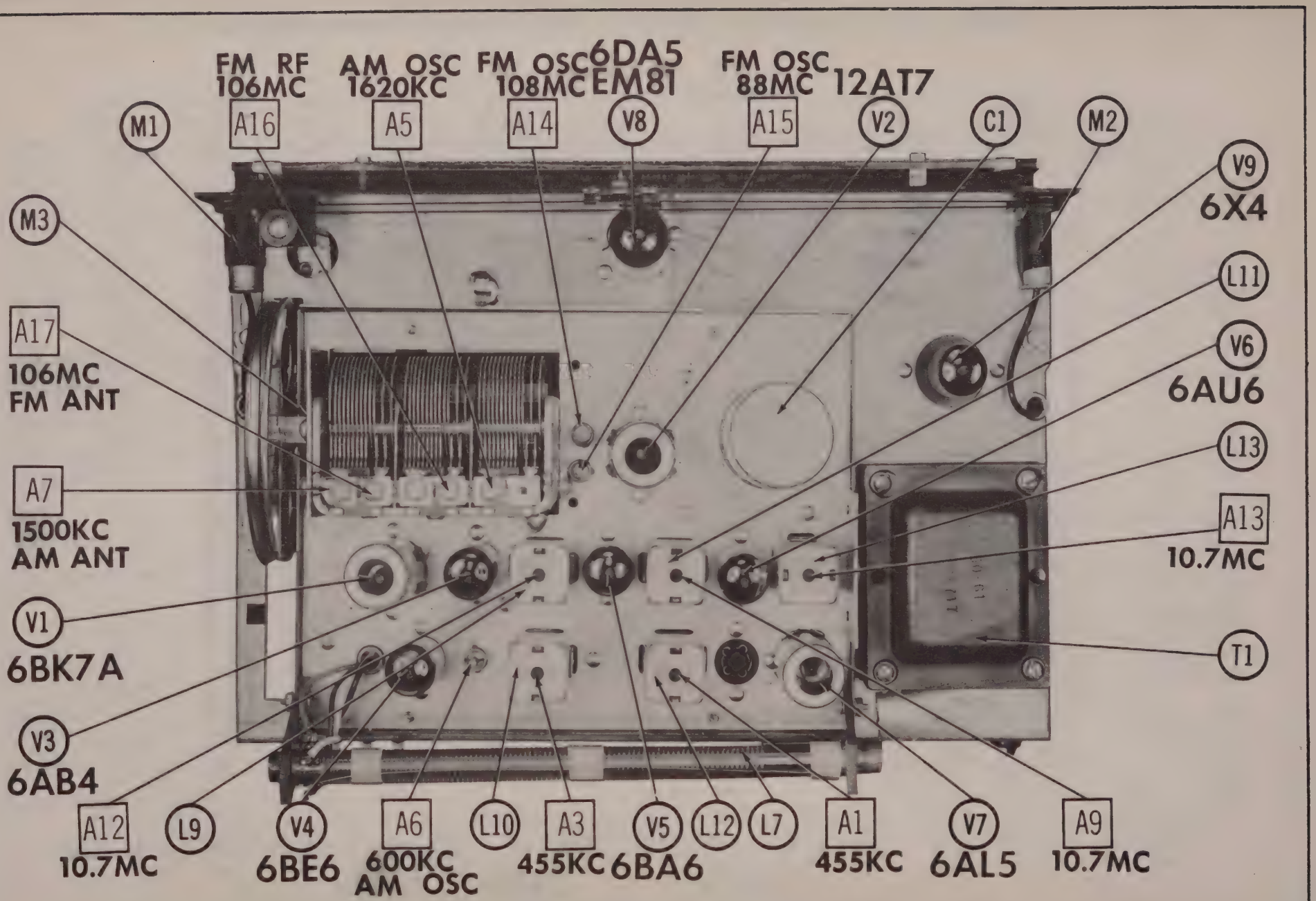
TUNER CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



TUNER CHASSIS BOTTOM VIEW - ALIGN, CAPACITOR & MISC IDENT

MODEL B802 (CH. 1116 Tuner, 1108 Amp.)

HOFFMAN



TUNER CHASSIS - TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 6BE6 (V4). Low side to chassis	455KC (400~ Mod)	AM	Tuning gang fully open	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	200mmf	Loop	1620KC	"	1620KC	"	A5	"
3.	"	"	600KC	"	600KC	"	A6	"
4.	"	"	1500KC	"	1500KC	"	A7	Adjust for maximum deflection. Repeat steps 2, 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01mfd	High side to pin 6 (grid) of 6AB4 (V3). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓑ. Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.01mfd	High side to pin 6 (grid) of 6AB4 (V3). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓑ. Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
6.	"	"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A13	Reconnect C3. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7.	270Ω Carbon Resistor	High side to FM antenna terminal. Low side to chassis.	108MC	FM	108MC	DC probe to point Ⓑ. Common to chassis.	A14	Adjust for maximum deflection.
8.	"	"	88MC	"	88MC	"	A15	"
9.	"	"	106MC	"	106MC	"	A16, A17	"
10.	"	"	92MC	"	92MC	"	A18, A19	"

FIG. 1

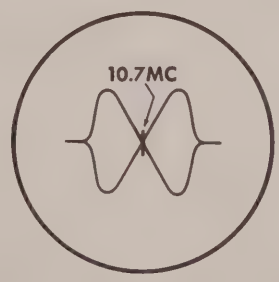
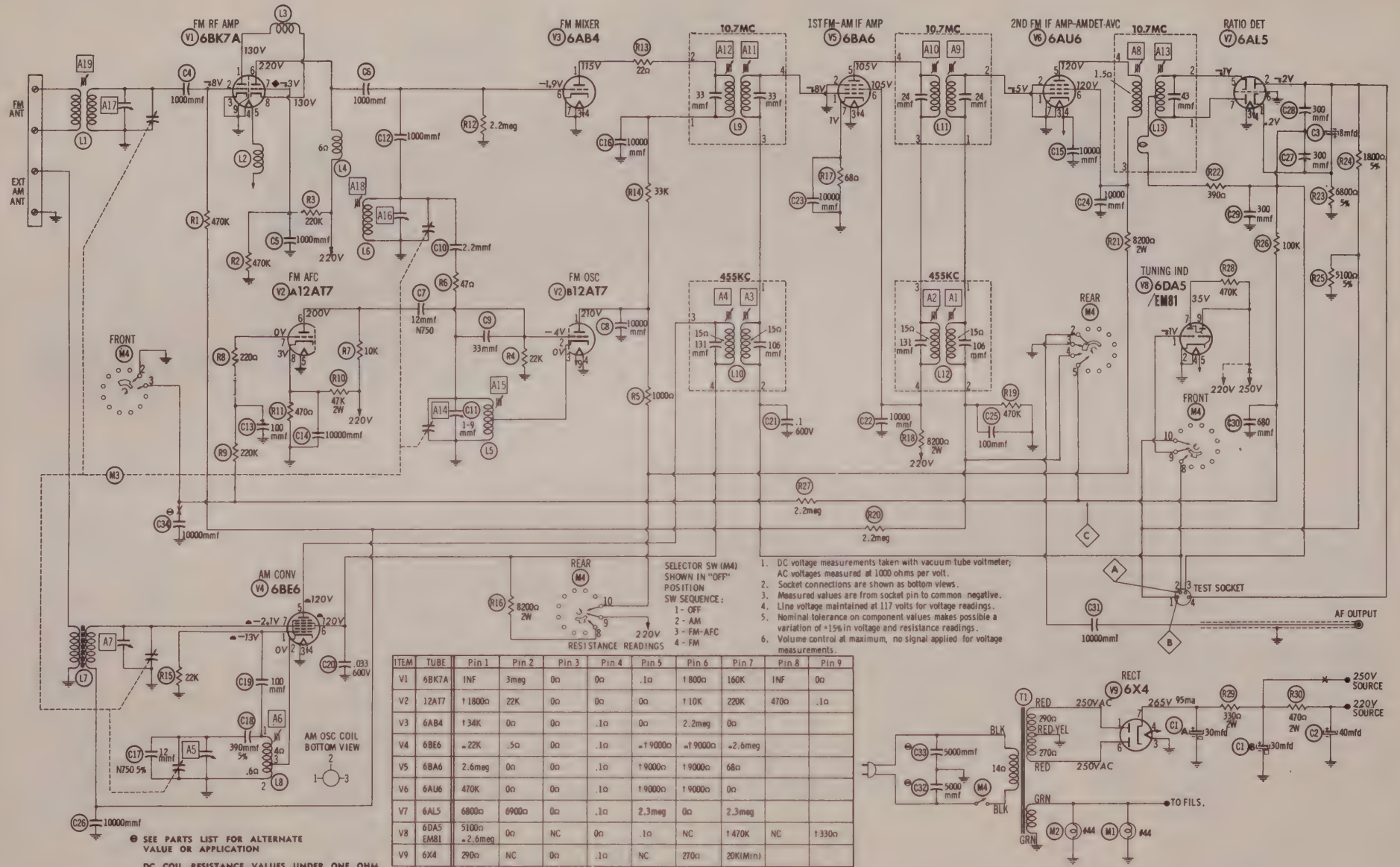


FIG. 2



SELECTOR SW (M4) SHOWN IN "OFF" POSITION
SW SEQUENCE:
1 - OFF
2 - AM
3 - FM-AFC
4 - FM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BK7A	INF	3meg	0Ω	0Ω	.1Ω	†800Ω	160K	INF	0Ω
V2	12AT7	†1800Ω	22K	0Ω	0Ω	0Ω	†10K	220K	470Ω	.1Ω
V3	6AB4	†34K	0Ω	0Ω	.1Ω	0Ω	2.2meg	0Ω		
V4	6BE6	▪22K	.5Ω	0Ω	.1Ω	▪†9000Ω	▪†9000Ω	▪2.6meg		
V5	6BA6	2.6meg	0Ω	0Ω	.1Ω	†9000Ω	†9000Ω	68Ω		
V6	6AU6	470K	0Ω	0Ω	.1Ω	†9000Ω	†9000Ω	0Ω		
V7	6AL5	6800Ω	6900Ω	0Ω	.1Ω	2.3meg	0Ω	2.3meg		
V8	6DA5 EM81	5100Ω ▪2.6meg	0Ω	NC	0Ω	.1Ω	NC	†470K	NC	†330Ω
V9	6X4	290Ω	NC	0Ω	.1Ω	NC	270Ω	20K(Min)		

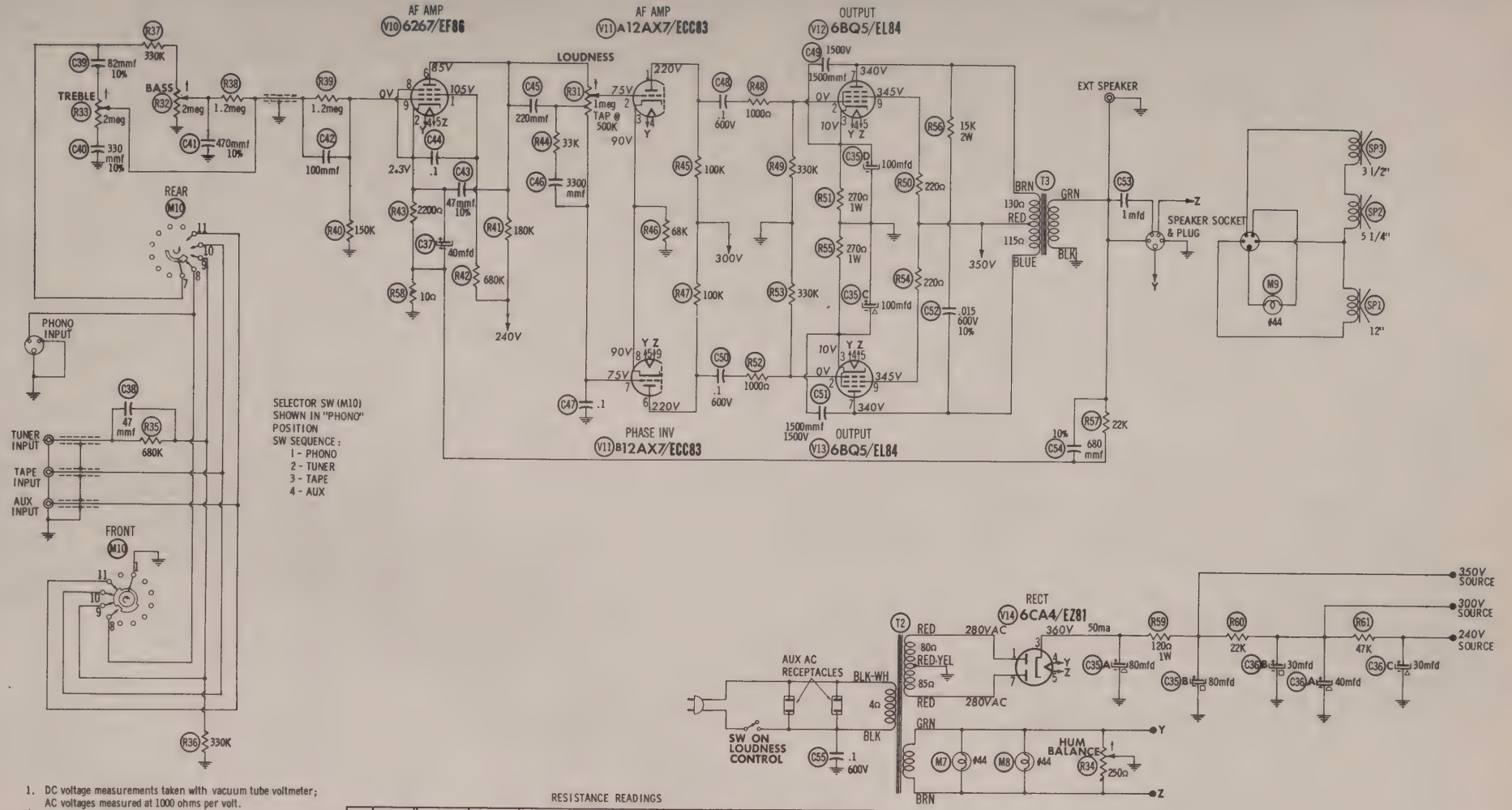
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM PIN 7 OF V9
▪ MEASURED IN "AM" POSITION
• MEASURED FROM PIN 8 OF V1
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V10	6267 EF86	††750K	2200Ω	2200Ω	27Ω	27Ω	††250K	2200Ω	2200Ω	150K
V11	12AX7 ECC83	††120K	††1meg	68K	27Ω	27Ω	††120K	††1.2meg	68K	27Ω
V12	6BQ5 EL84	NC	330K	270Ω	27Ω	27Ω	NC	††250Ω	NC	††340Ω
V13	6BQ5 EL84	NC	330K	270Ω	27Ω	27Ω	NC	††235Ω	NC	††340Ω
V14	6CA7 EZ81	81Ω	NC	20K(Min)	27Ω	27Ω	NC	87Ω	NC	NC

†† MEASURED FROM PIN 3 OF V14
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

408-9

HOFFMAN
MODEL B802 (CH. 1116 Tuner, 1108 Amp.)

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	6BK7A	
V2	FM Osc. - FM AFC	12AT7	
V3	FM Mixer	6AB4	
V4	AM Converter	6BE6	
V5	1st FM-AM IF Amp.	6BA6	
V6	2nd FM IF Amp. - AM Det. - AVC	6AU6	
V7	Ratio Detector	6AL5	
V8	Tuning Indicator	6DA5/EM81	
V9	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲30	450	856702	AFH2-54	B0430	FP237	TMD-52	D-225	TVL-2759
B	■30	450							
C2	40	350	856015	PRS450V40	BR4035	TC78	TD-40-350	MT-4540	TVA-1611
C3	8	150	856014	PRS150V8	BBR8-150	TC41	TD-8-150	MT-1508	TVA-1405

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C5	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C6	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C7	12				DTN-12	C10Q12C			N750
C8	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C9	33			BPD-000033	DD-330	L10Q33	UC-5433	5GA-Q33	
C10	2. 2			NPO-S1 2. 2	TCZ-2R2	C10V22C		5TCCB-V22	
C11	1-9								
C12	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C13	100			BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C14	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C15	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C16	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C17	12				DTN-12	C10Q12U			N750 5%
C18	390			1469-00039		5R5T39		MS-339	5%
C19	100			BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C20	. 033	600		P688N-033	DF-303	CUB6S33	GEM-6133	6TM-S33	
C21	. 1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C22	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C23	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C24	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C25	100			BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C26	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C27	300			DI-0003	DD-301	L10T3	UC-533	5GA-T3	
C28	300			DI-0003	DD-301	L10T3	UC-533	5GA-T3	
C29	300			DI-0003	DD-301	L10T3	UC-533	5GA-T3	
C30	680			BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C31	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C32	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	Note 1
C33	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	Note 1
C34	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	Note 2

Note 1. Some versions may use 4000mmf in this application.
Note 2. Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		HOFFMAN PART No.	NOTES
	OHMS	WATT		
R1	470K			
R2	470K			
R3	220K			
R4	22K			

TUNER PARTS LIST AND DESCRIPTIONS(cont)

RESISTORS (cont)

ITEM No.	RATING		HOFFMAN PART No.	NOTES
	OHMS	WATT		
R5	1000Ω			
R6	47Ω			
R7	10K			
R8	220Ω			
R9	220K			
R10	47K	2		
R11	470Ω			
R12	2. 2meg			
R13	22Ω			
R14	33K			
R15	22K			
R16	8200Ω	2		
R17	68Ω			
R18	8200Ω	2		
R19	470K			
R20	2. 2meg			
R21	8200Ω	2		
R22	390Ω			
R23	6800Ω 5%			
R24	1800Ω 5%			
R25	5100Ω 5%			
R26	100K			
R27	2. 2meg			
R28	470K			
R29	330Ω	2		
R30	470Ω	2		

TRANSFORMER (POWER)

ITEM No	RATING			REPLACEMENT DATA						
	PRI	SEC 1	SEC 2	HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ 44A	500VCT ⓑ .050A	6.3V ⓒ 3.1A	716006	P9213	P-3051		PM8419	24R12	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		HOFFMAN PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Trans.	776003					
L2	Fil. Choke	750007	19-1000	BC-561	4602		1. 18 Microhenries
L3	Neutr. Coil	750008	19-1000	BC-561	4602		1 Microhenry
L4	RF Choke	750009			4609		5. 5 Microhenries, IRC Part #CL-1
L5	FM Osc. Coil	768009					
L6	FM Mixer Coil	776001					
L7	Loop Stick	924002					
L8	AM Osc. Coil	768010					
L9	1st FM IF	760012	16-3487	FM-254	1463		
L10	1st AM IF	760011	16-6758	BC-352	12-C1	RF-1	
L11	2nd AM IF	760013	16-3487	FM-254	1463		
L12	2nd AM IF	760011	16-6758	BC-353	12-C2	RF-2	
L13	Ratio Det.	774004	17-3498	FM-255	1465		

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M1	Dial Lamp	940044	#47
M2	Dial Lamp	940044	#47
M3	Tuning Cap.	872005	6 Gang (AM Sections: Ant. 58-360mmf, Osc. 5-327mmf)
M4	Switch	902008	AM-FM Selector, Rotary Wafer Type (Includes On-Off Sw.)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

AMP PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V10	AF Amplifier	6267/EF86	
V11	AF Amp. - Phase Inv.	12AX7/ ECC83	

ITEM No.	USE	TYPE	NOTES
V12	Output	6BQ5/EL84	
V13	Output	6BQ5/EL84	
V14	Rectifier	6CA4/EZ81	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C35A	▲80	400	857102-2		B0356	FP420. 43		Q-241	R2635 *
B	■80	350			BBRD101015			MT-4580	
C	▲100	25							
D	100	25							
C36A	▲40	300	856902	AFH3-50-10	C0374	FP396. 14	TMT-23	Q-015	TVL-3843
B	■30	300							
C	▲30	300							
C37	40	3	856003	XPP-3040	NL40-3	TT3X40	ML40-6	MMT-350	TE-1057

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C38	47			BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C39	82				DD-820	L10Q82		MS-482	10%
C40	330				D6-331	L10T33		MS-333	10%
C41	470				D6-471	5R5T47		MS-347	10%
C42	100			BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C43	47				DD-470	L10Q47		MS-447	10%
C44	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C45	220			BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C46	3300			BPD-0033	DD-332	BYA10D33	UC-5233	5GA-D33	
C47	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C48	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C49	1500	1500		HVD-15-1500	DD30-152	HVC16D15	DC30215		
C50	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C51	1500	1500		HVD-15-1500	DD30-152	HVC16D15	DC30215		
C52	.015	600							10%
C53	1.0	100		P288N-1.0		CUB2W1	GEM-21	2TM-M1	
C54	680				D6-681	5R5T68		MS-368	10%
C55	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R31A	1meg	½	800005	BT-71	A47F5-1meg	Q19-137X	UT-443	Loudness, Tap @ 500K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	
R32A	2meg	½	800004	B-75	A47-2meg-S	Q11-139	U56	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R33A	2meg	½	800004	B-75	A47-2meg-S	Q11-139	U56	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R34A	250Ω	½	8000014	WN-251		Q11-201	R250L	Hum Control
B	Shaft			Not Req.		RQ	Not Req.	

* Use KR with CRL "red label" controls and KB with "blue label" controls.

AMR PARTS LIST AND DESCRIPTIONS(cont)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	HOFFMAN PART No.	NOTES
R35	680K			
R36	330K			
R37	330K			
R38	1. 2meg			
R39	1. 2meg			
R40	150K			
R41	180K			
R42	680K			
R43	2200Ω			
R44	33K			
R45	100K			
R46	68K			
R47	100K			
R48	1000Ω			

ITEM No.	RATING OHMS	RATING WATT	HOFFMAN PART No.	NOTES
R49	330K			
R50	220Ω			
R51	270Ω	1		
R52	1000Ω			
R53	330K			
R54	220Ω			
R55	270Ω	1		
R56	15K	2		
R57	22K			
R58	10Ω			
R59	120Ω	1		
R60	22K			
R61	47K			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	117V @ .67A	580VCT @ .095A	6. 3V @ 3. 5A	716002-2	P9208			PC-8405		R-12A

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	7200Ω CT	6-8Ω	724002-3	Z1405			A-3304	22S68	S-24A	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA HOFFMAN PART No.	QUAM PART No.	NOTES
SP1	12"	PM	6-8Ω	708801	12A10X	
SP2	5 1/4"	PM	6-8Ω	708202	52AZ8	
SP3	3 1/2"	PM	6-8Ω	708001	3A0Z8	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA HOFFMAN PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M5	981003	89-TB		56	PT-1	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA HOFFMAN PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M6		† JPS39 or †♦ JPS39SD ♦ JPS39D		† Jewel ♦ Diamond

HOFFMAN
MODEL B802 (CH. 1116 Tuner, 1108 Amp.)

AMP PARTS LIST AND DESCRIPTIONS(cont)

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M7	Lamp	940044	#44
M8	Lamp	940044	#44
M9	Lamp	940044	#44
M10	Switch	902003	Input Selector, 4 Position, Single Section, Rotary Wafer Type Wafer Type

CABINETS & CABINET PARTS

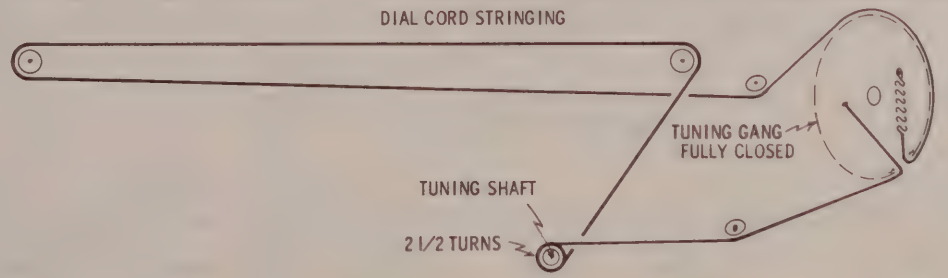
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	619001	Amplifier
Dial Glass	619008	Tuner
Bezel	529002	Display Scope
Bezel	529001	Tuner Dial
Knob	500028	With Pointer
Knob	500029	No Pointer
Cabinet	381006	Mahogany
Cabinet	381007	Oak
Cabinet	381005	Walnut
Cabinet	381008	Maple

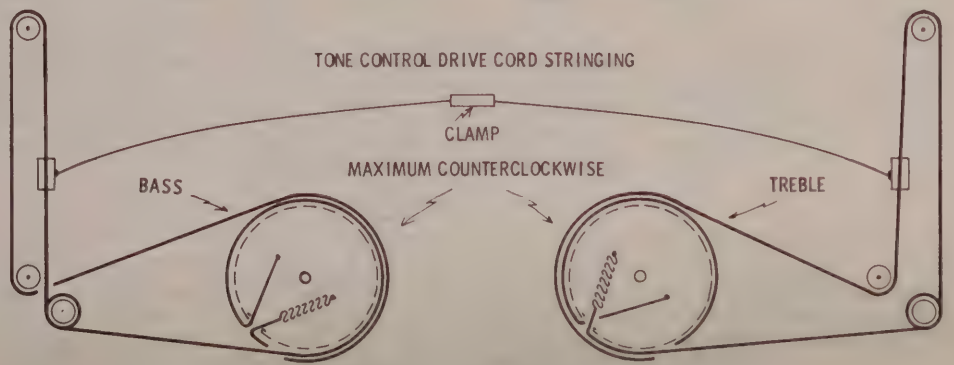
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

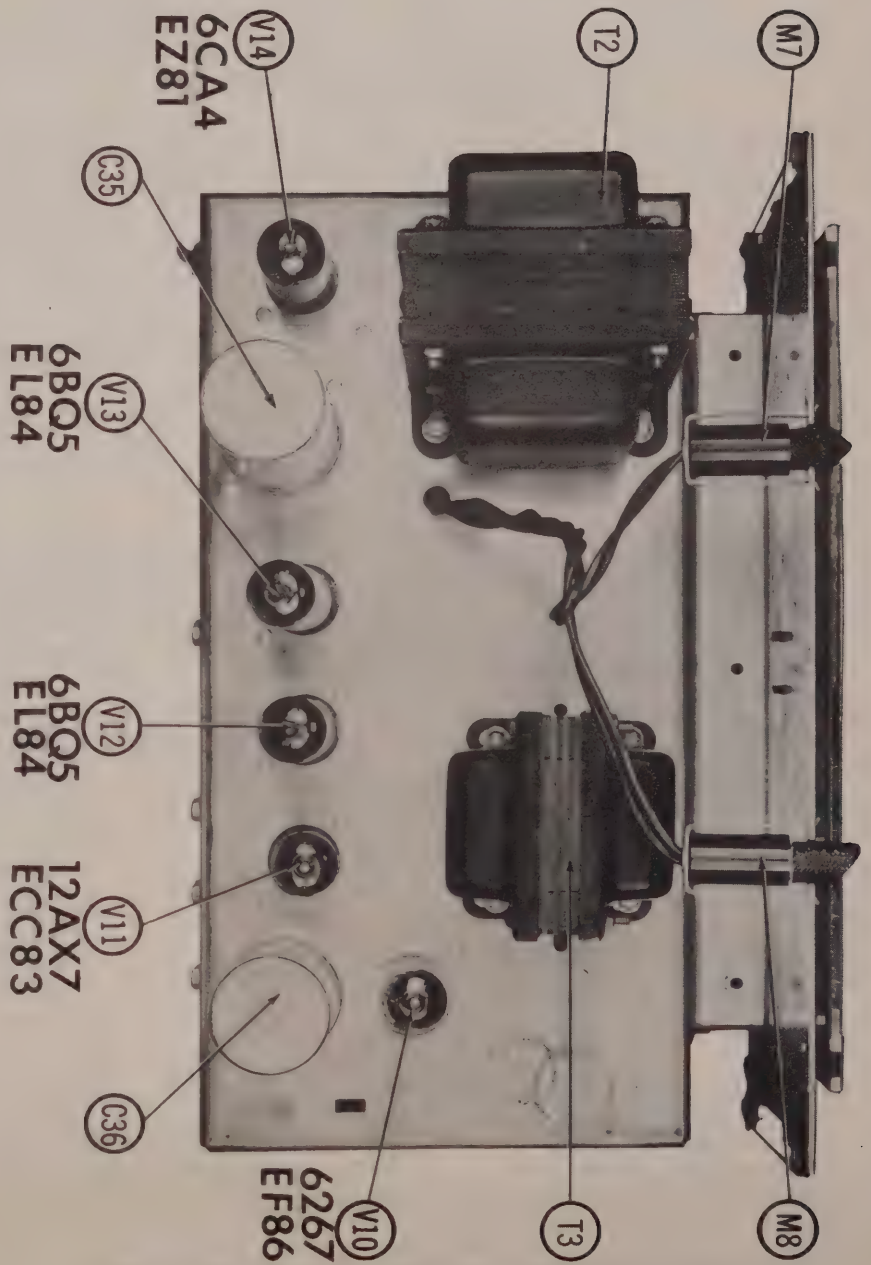
DIAL CORD STRINGING



TONE CONTROL DRIVE CORD STRINGING



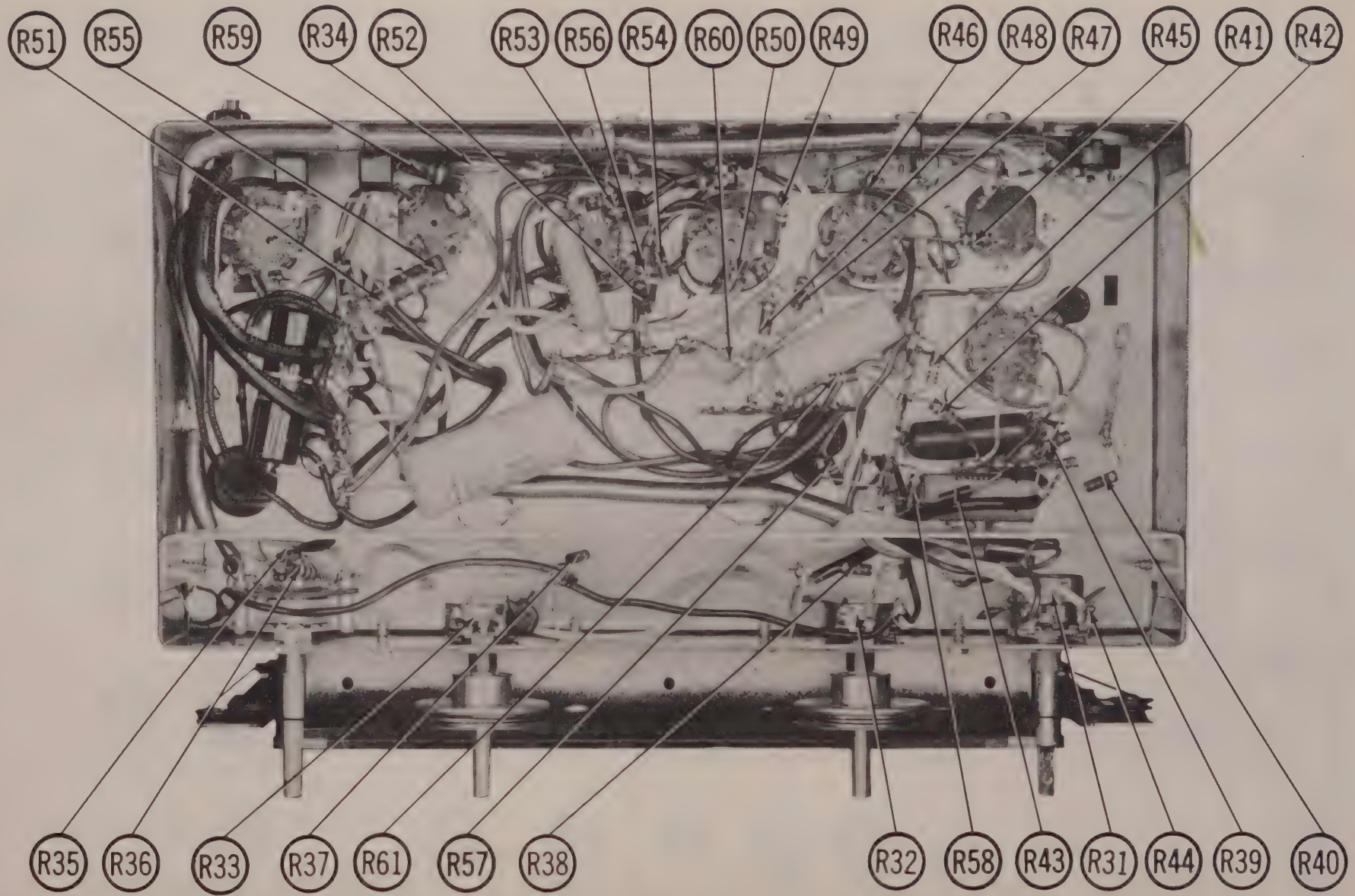
AMP CHASSIS—TOP VIEW



HOFFMAN

MODEL B802 (CH. 1116 Tuner, 1108 Amp.)

AMP CHASSIS BOTTOM VIEW - CAPACITOR IDENT



AMP CHASSIS BOTTOM VIEW - RESISTOR IDENT

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

KNIGHT MODEL KN-510 (92SX409)

KNIGHT MODEL KN-510 (92SX409)

KNIGHT MODEL KN-510 (92SX409)

TRADE NAME	Knight Model KN-510 (92SX409)
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois
TYPE SET	AC Operated Audio Amplifier
TUBES (Five)	Types 12AX7/ECC83 AF Amplifier, 6BA8A AF Amp.-Phase Inv., (2) 6V6GT Output, 6V4/EZ80 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .65 Amp. @117 Volts AC (63 Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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H504

PARTS LIST AND DESCRIPTIONS

KNIGHT
MODEL KN-510 (92SX409)

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	AF Amplifier	12AX7/ECC83
V2	AF Amp. - Phase Inv.	6BA8A
V3	Output	6V6GT

ITEM No.	USE	TYPE
V4	Output	6V6GT
V5	Rectifier	6V4/EZ80

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	400		PR4-185	BBRQ22245C	WQ775		FMT-337	R2565*
B	20	400						MT-4540	
C	25	25							
C2A	10	450		PRS450V1010	BBRD8D45	TCD72	TDLD-26	MTD-4510	TVA-2722
B	10	450							
C3	20	6		SRE6V25	BBR25-6	TT15X20	ML20-6	MMT-625	TE-1090

* Non Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

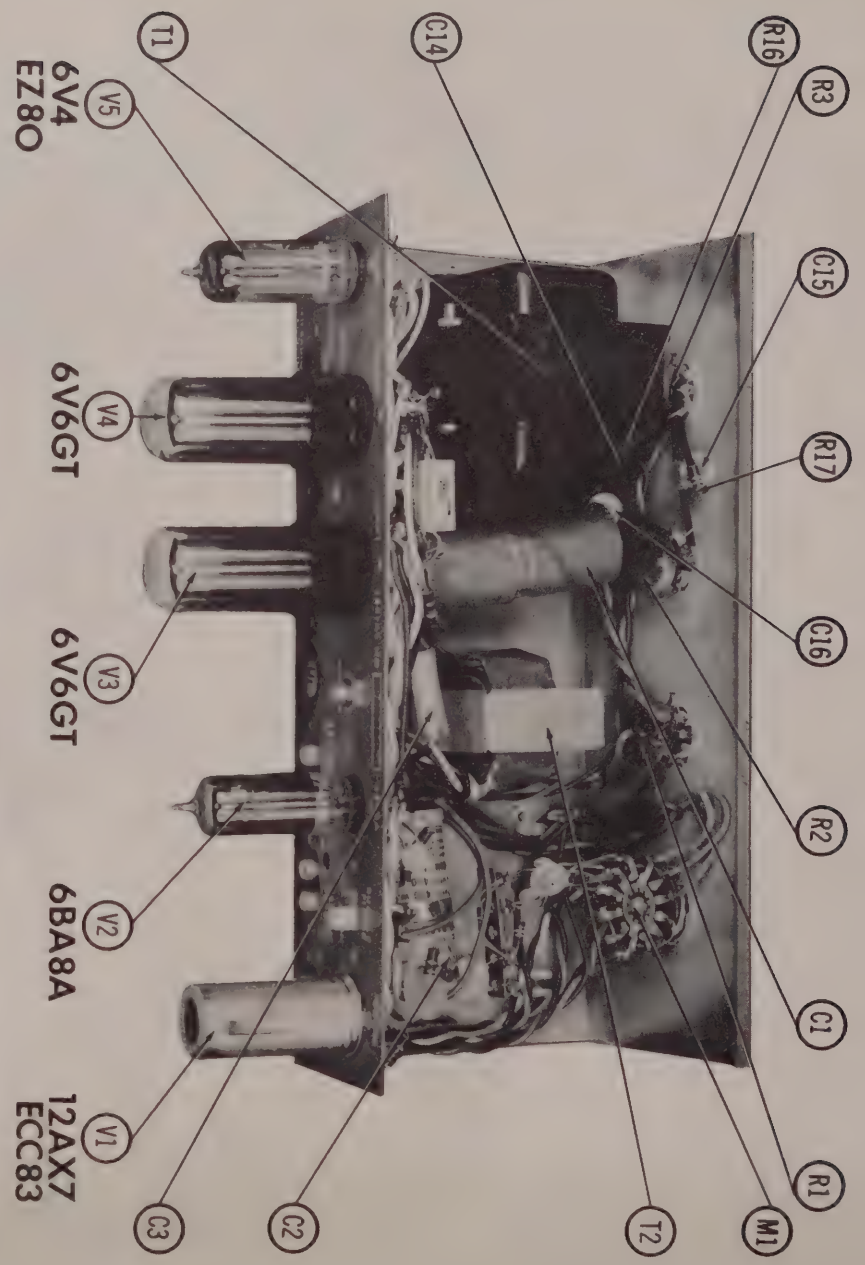
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	330				MD-331	L10T33			10%
C5	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C6	180				DD-181	L10T18			10%
C7	1000								10%
C8	3000								10%
C9	470				MD-471				10%
C10	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C11	4000								10%
C12	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C13	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C14	240					L10T24			
C15	3000								10%
C16	3000								10%
C17	470				MD-471				10%
C18	27					C10Q27U			10%
C19	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	NPO 10%
C20	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	B20066-P152	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	2meg	½	B20066-P151	B-76	A47-2meg-Z	Q13-139	U55	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	2meg	½	B20066-P150	B-76	A47-2meg-Z	Q13-139	U55	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	
R4A	100Ω	2W	B20066-P141	WN-101	A43-100	WPK100	R100L	Hum Balance
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

* Use KR with CRL "Red Label" controls & KB with "Blue Label" controls.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	KNIGHT PART No.	NOTES
R5	56K			
R6	470K			
R7	270K			
R8	270K			
R9	1meg			
R10	3.3meg			
R11	680Ω			
R12	4.7meg			
R13	4.7meg			
R14	470K			
R15	100K			
R16	330K			Note 1
R17	68K			
R18	470K			
R19	68K			
R20	22K			
R21	5600Ω			
R22	10K			
R23	47Ω			
R24	270K			
R25	10K			
R26	270K			
R27	470K			
R28	250Ω	5(WW)		
R29	470K			
R30	2200Ω	1		

Note 1, Some versions may use 470K in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC 1	RATING SEC 2	REPLACEMENT DATA KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .65A	640VCT @ .090A	6.3V @ 2.4A	B20326					22R04 ⊥	

⊥ Use original shields

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6000Ω CT	16Ω Tap @ 8Ω, 4Ω	B-20344	Z1404	A-2904	AU-604	A-3852	24S64	S-55Z	

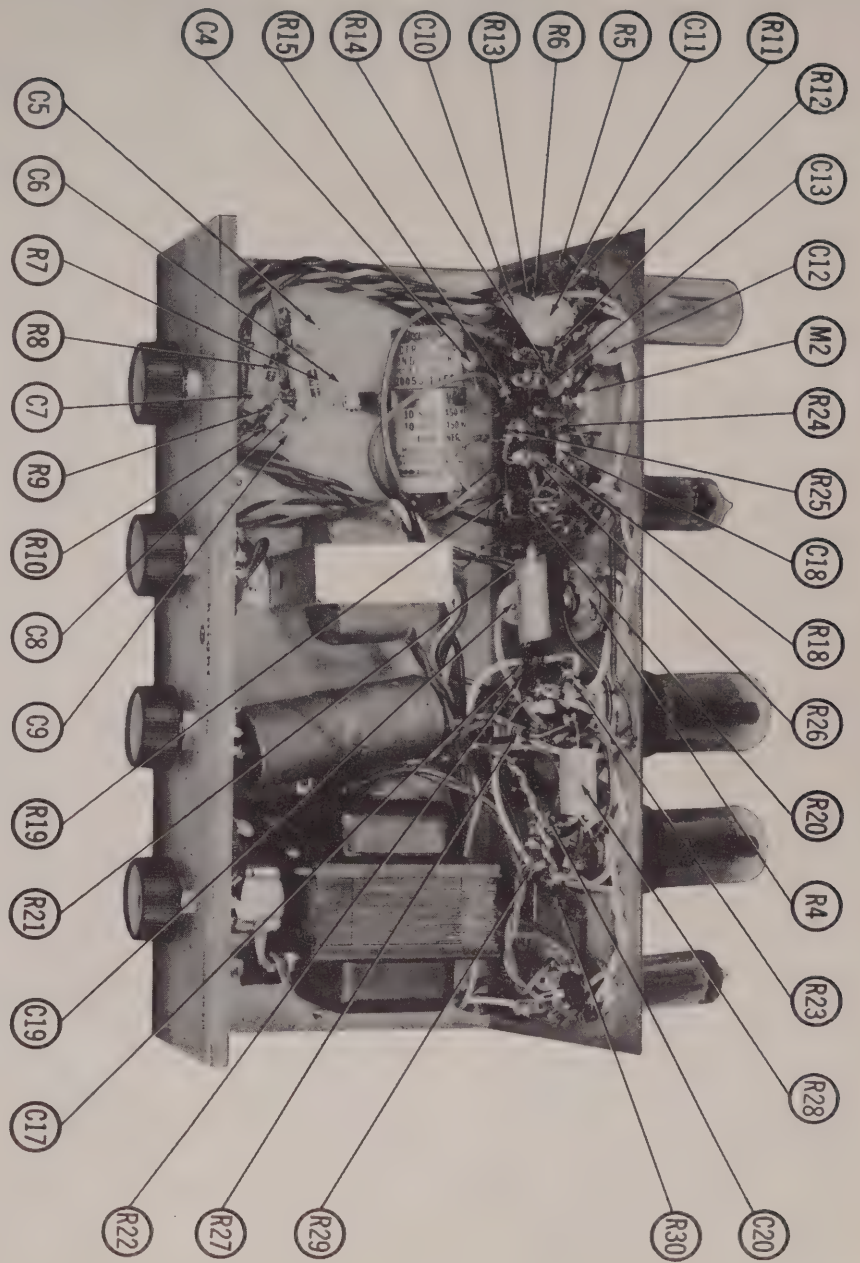
MISCELLANEOUS

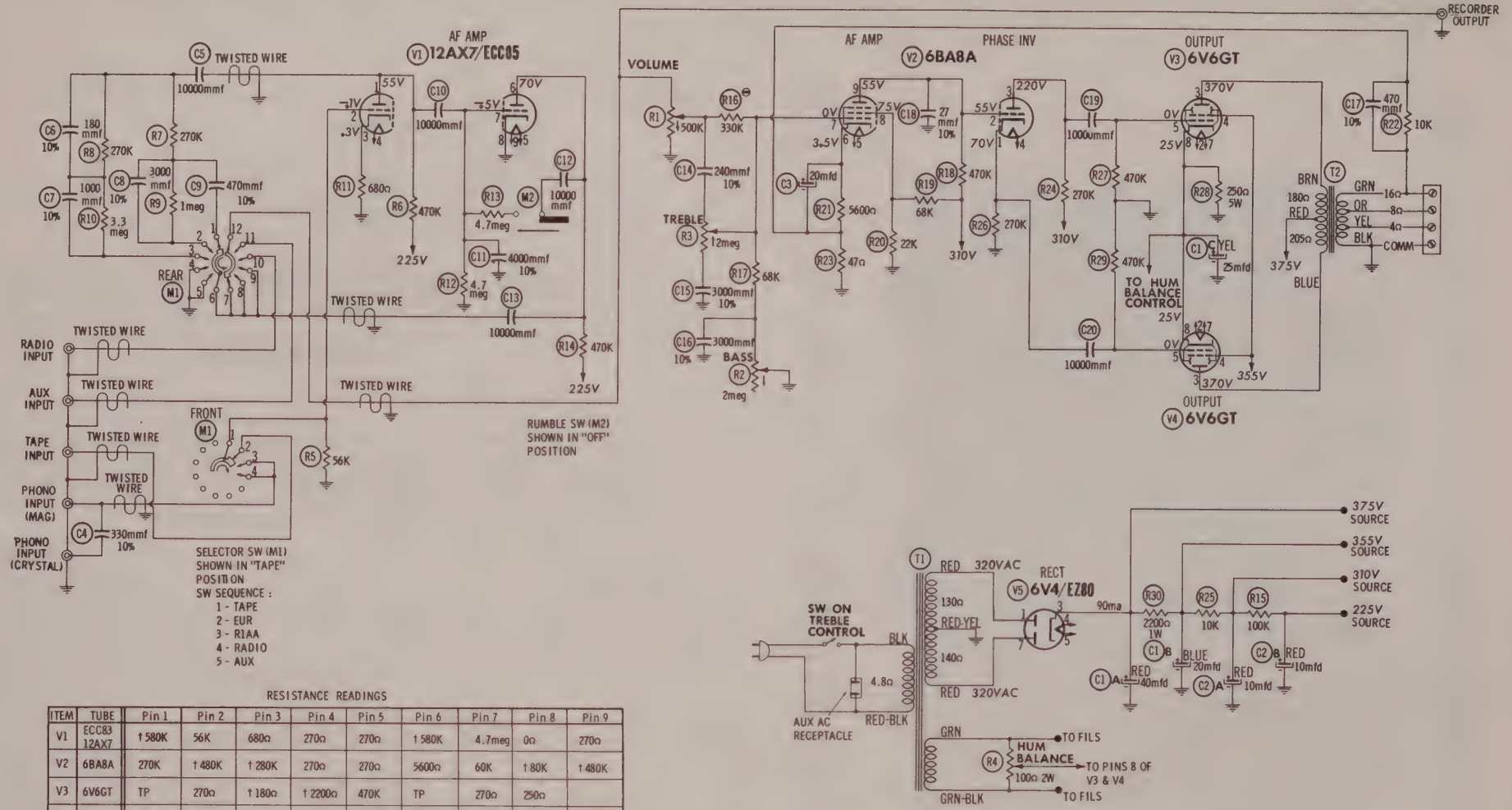
ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M1	Switch		Selector, 5-Position, Rotary Single Wafer Type.
M2	Switch		Rumble Filter, SPST, Slide Type.

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†580K	56K	680Ω	270Ω	270Ω	†580K	4.7meg	0Ω	270Ω
V2	6BA8A	270K	†480K	†280K	270Ω	270Ω	5600Ω	60K	†80K	†480K
V3	6V6GT	TP	270Ω	†180Ω	†2200Ω	470K	TP	270Ω	250Ω	
V4	6V6GT	TP	270Ω	†205Ω	†2200Ω	470K	TP	270Ω	250Ω	
V5	EZ80 6V4	130Ω	NC	20K(MIN)	270Ω	270Ω	NC	140Ω	NC	NC

† MEASURED FROM PIN 3 OF V5
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

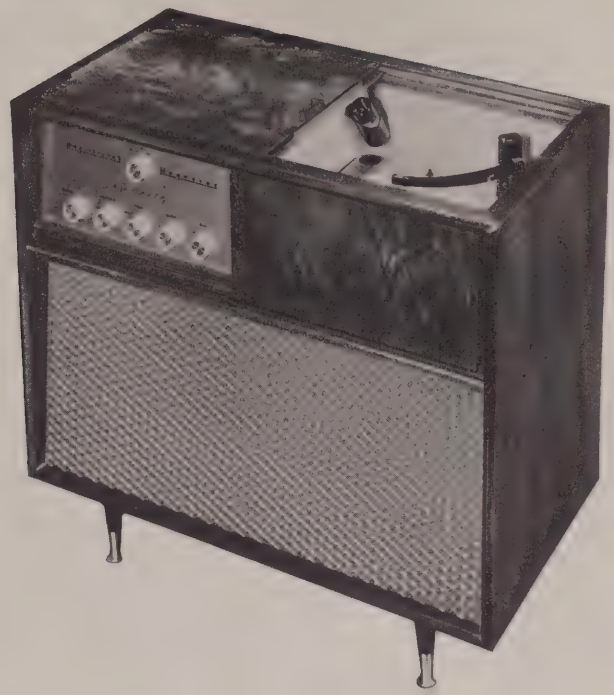
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

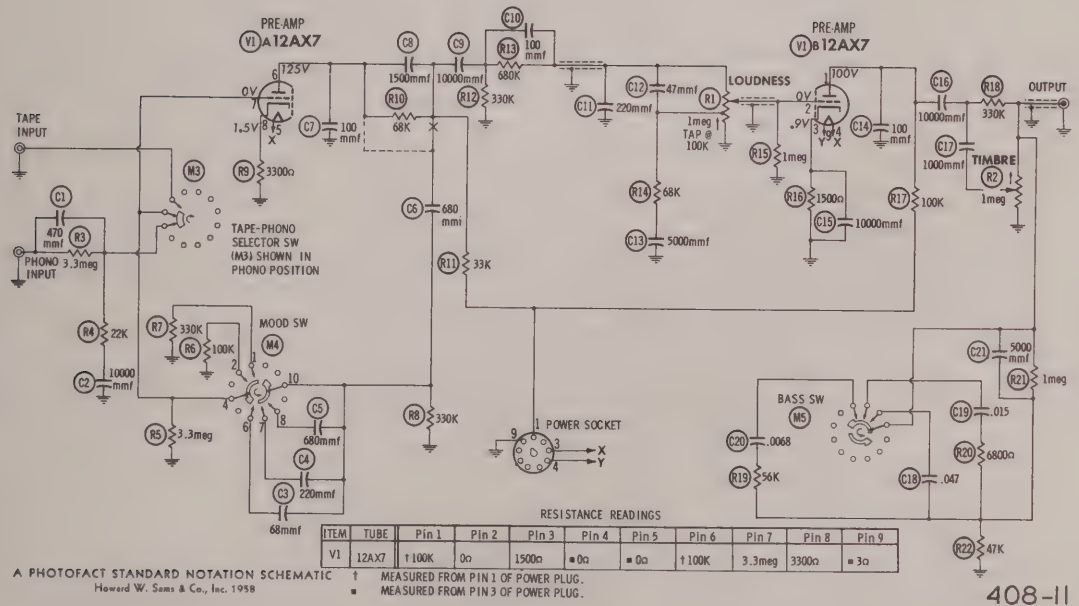
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MAGNAVOX
CHASSIS AMP-171AA

MAGNAVOX
CHASSIS AMP-171AA



TRADE NAME	Magnavox Ch. Amp.-171AA
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Fort Wayne 4, Indiana
TYPE SET	Externally Powered 2 Channel Preamplifier
TUBES (One)	Type 12AX7 Preamplfier
RATING	300MA @ 6.3 Volts AC-DC & 1MA @ 130 Volts DC



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†100K	0Ω	1500Ω	▪0Ω	▪0Ω	†100K	3.3meg	3300Ω	▪3Ω

† MEASURED FROM PIN 1 OF POWER PLUG.
▪ MEASURED FROM PIN 3 OF POWER PLUG.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

408-11

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	12AX7	

ITEM No.	USE	TYPE	NOTES

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	470		250218-6	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C2	1000		250218-8	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C3	68		250218-7	BPD-000068	DD-680	L10Q68	UC-5468	5GA-Q68	
C4	220		250218-5	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C5	680		250218-4	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C6	680		250218-4	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C7	100		250218-22	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C8	1500		250218-18	BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C9	10000		250218-19	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C10	100		250218-22	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C11	220		250218-5	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C12	47		250218-17	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C13	5000		250175-30	BPD-005	DD-502	BYA10D5	DC525	5HK-D47	
C14	100		250218-22	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C15	10000		250218-19	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C16	10000		250218-19	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C17	1000		250218-8	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C18	.047	200	250202-11	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C19	.015	200	250202-8	P288N-015	DD16-153	CUB4S15	GEM-4115	4TM-S15	
C20	.0068	400	250211-6	P488N-0068	D6-682	CUB6D68	GEM-6268	6TM-D68	
C21	5000		250175-30	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	220074-12	BT-7417	A47F3-1meg	Q18-137X		Loudness, Tap @ 100K
B	Shaft			Not Req.	FS-3	Not Req.		
R2A	1meg	½	220072-29	B-70	A47-1meg-Z	Q13-137	U53	Timbre
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MAGNAVOX PART No.	NOTES
	OHMS	WATT		
R3	3.3meg		230104-104	
R4	22K		230104-78	
R5	3.3meg		230104-104	
R6	100K		230104-86	
R7	330K		230104-92	
R8	330K		230104-92	
R9	3300Ω		230104-68	
R10	68K		230104-84	
R11	33K		230104-80	
R12	330K		230104-92	

ITEM No.	RATING		MAGNAVOX PART No.	NOTES
	OHMS	WATT		
R13	680K		230104-96	
R14	68K		230104-84	
R15	1meg		230104-98	
R16	1500Ω		230104-64	
R17	100K		230104-86	
R18	330K		230104-92	
R19	56K		230104-83	
R20	6800Ω		230104-72	
R21	1meg		230104-98	
R22	47K		230104-82	

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M3	Switch	160169-8	Input Selector (Rotary Wafer Type)
M4	Switch	162278-1	Mood (Rotary Wafer Type)
M5	Switch	160278-1	Bass (Rotary Wafer Type)

CHASSIS—BOTTOM VIEW

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

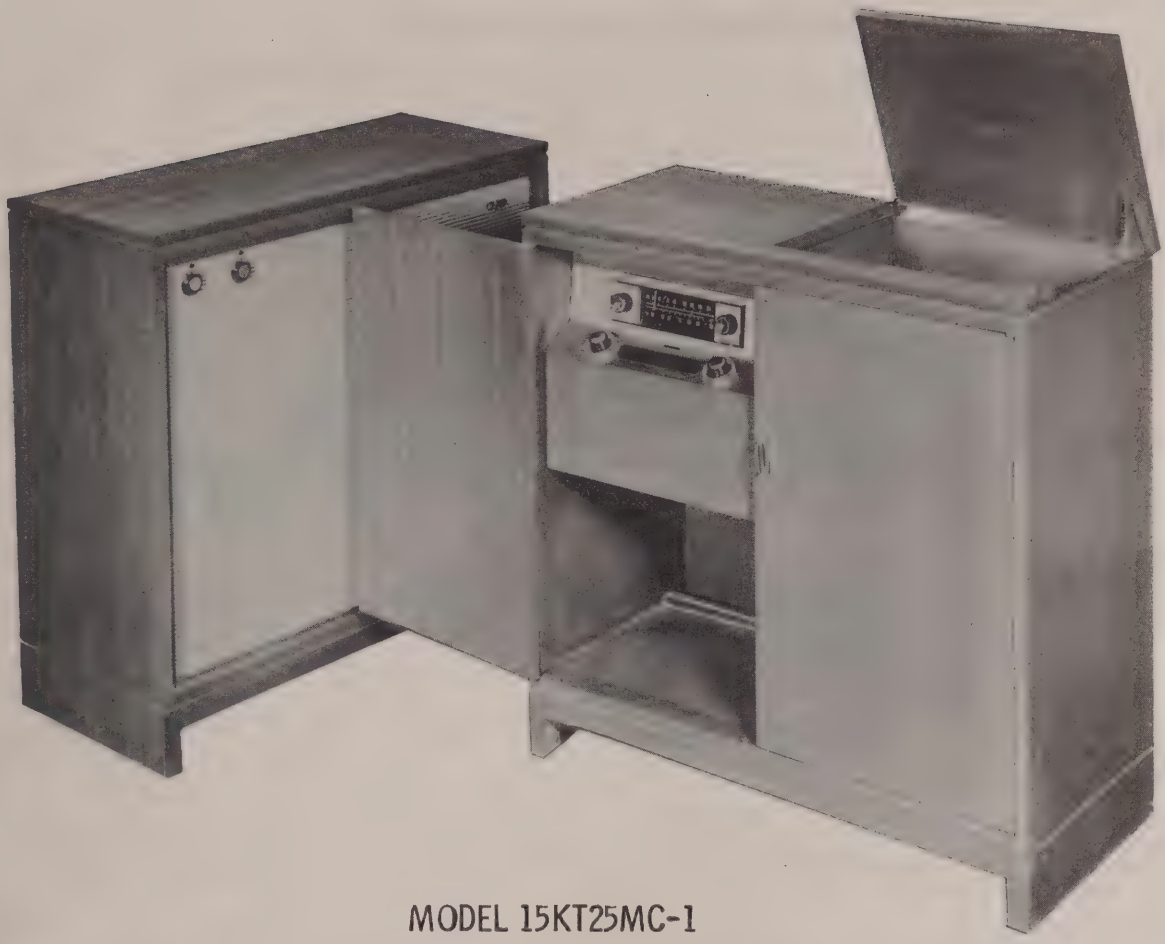
PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MOTOROLA MODELS HK-18B, C, M, W, HK-19, 15KT25B-1, -1S, 15K25M-1, -1S, 15KT25MC-1, -1S, 15KT25MCH-1, -1S (Ch. HS-590, HS-607)

MOTOROLA MODELS HK-18B, C, M, W, HK-19, 15KT25B-1, -1S, 15K25M-1, -1S, 15KT25MC-1, -1S, 15KT25MCH-1, -1S (Ch. HS-590, HS-607)



MODEL 15KT25MC-1

MOTOROLA MODELS HK-18B, C, M, W, HK-19, 15KT25B-1, -1S, 15K25M-1, -1S, 15KT25MC-1, -1S, 15KT25MCH-1, -1S (Ch. HS-590, HS-607)

TRADE NAME	Motorola Models HK-18B, HK-18C, HK-18M, HK-18W, HK-19 (Ch. HS-590 FM AM Tuner); 15KT25B-1, 15KT25B-1S, 15KT25M-1, 15KT25M-1S, 15KT25MC-1, 15KT25MC-1S, 15KT25MCH-1, 15KT25MCH-1S (Ch. HS-607 Preamp., Output; HS-590 FM AM Tuner)		
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
TYPE SET	AC Operated FM AM Receiver With 4 Speed Automatic Record Changer		
TUBES	Tuner (9): Types 6BQ7A FM RF Amp.-FM Conv., 6BA6 1st FM IF Amp., 6BE6 AM Conv., 6BA6 2nd FM-1st AM IF Amp., 6AU6 FM Limiter, 6AL5 Ratio Det., 6DA5/EM81 Tuning Ind., 12AU7A Cath. Follower, 6X4 Rectifier Preamp. (2): Types 12AU7 Preamp., 12AU7 AF Amp. Power (4): Types 12AX7 AF Amp.-Phase Inv., (2) 6CA7/EL34 Output, 5U4GB Rectifier		
POWER SUPPLY	110-120 Volts AC - 60 Cycles	RATING	1.4 Amp. @ 117 Volts AC (149 Watts)
TUNING RANGE	BROADCAST 540 - 1600KC	FREQ. MOD.	88 - 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER—SEE SIMILAR V-M 1200A—PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10

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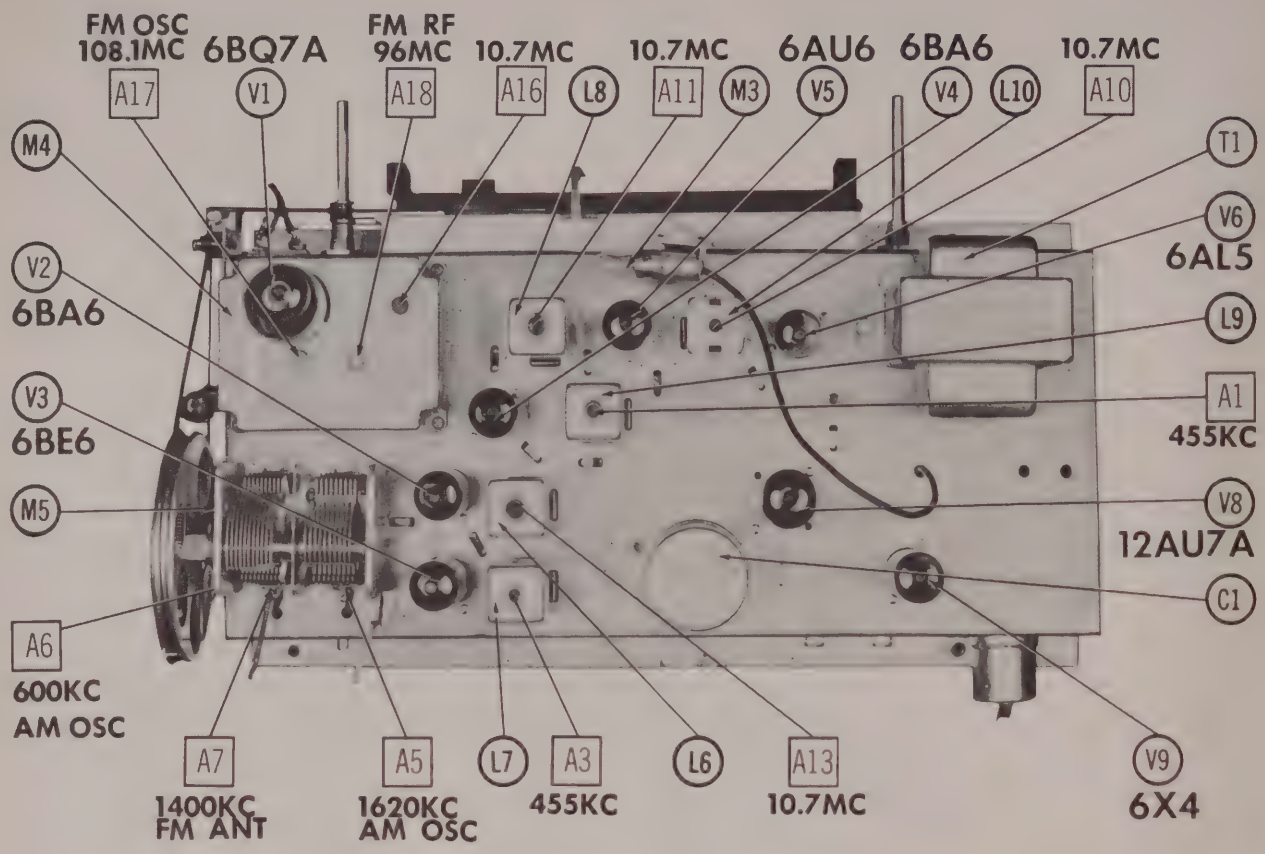
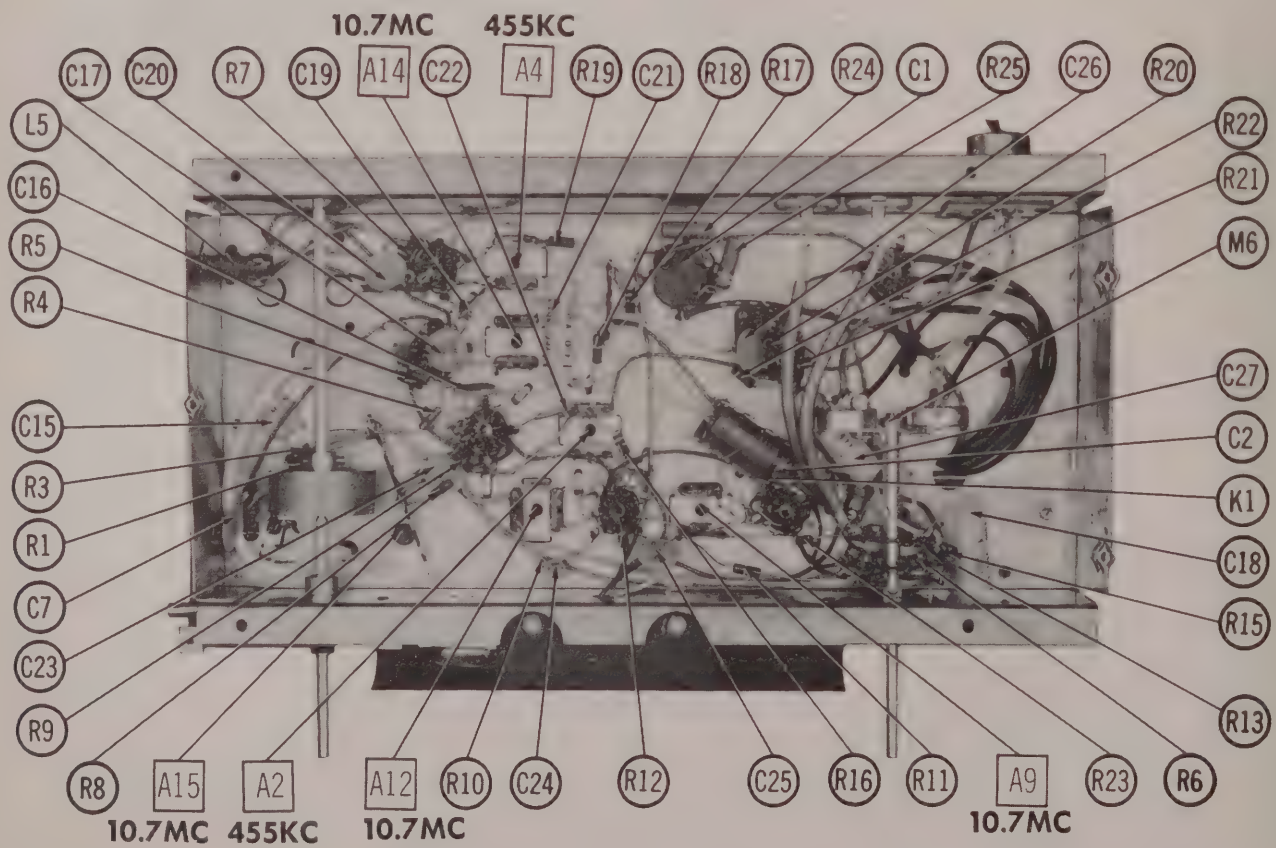
H470 H500



TUNER CHASSIS - TOP VIEW



TUNER CHASSIS - BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.
Tuning indicator (V7) may be used in lieu of the VTVM or scope except for step 7. If used, make adjustments for maximum closing of V7 shadow.
Attenuate generator output so that indicator does not close completely.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1	.1mfd	High side to pin 7 (grid) of 6BE6 (V3). Low side to chassis.	455KC (400∿ Mod)	AM	Tuning gang fully open	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2		Loop	1620KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	600KC	"	Tune to 600KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 2 and 3.
4		"	1400KC	"	Tune to 1400KC signal	"	A7	"
5		"	600KC	"	Tune to 600KC signal	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 4 and 5 with step 4 last.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6	.01mfd	High side to pin 1 (grid) of 6AU6 (V5). Low side to chassis	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓑ. Common to chassis.	A9	Adjust for maximum deflection.
7	"	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
8	270Ω Carbon Resistor	Across FM Antenna terminals with 270Ω in high side.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6	.01mfd	High side to pin 1 (grid) of 6AU6 (V5). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓑ. Low side to chassis.	A9	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
7	"	"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A10	Reconnect C2. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.
8	270Ω Carbon Resistor	Across FM Antenna terminals with 270Ω in high side.	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A11, A12, A13, A14, A15, A16	Disconnect C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1. Reconnect C2.

FM RF ALIGNMENT

Perform steps 9 and 10 if the FM tuner string is the original and has not been tampered with.
Perform steps 11 and 12 if the FM tuner string has been replaced or tampered with. String should be 3" long from tuner opening to collar.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9	270Ω Carbon Resistor	Across FM Antenna terminals with 270Ω in high side.	108.1MC	FM	Tuning gang fully open	DC probe to point Ⓑ. Common to chassis.	A17	Adjust for maximum deflection.
10	"	"	96MC	"	Tune to 96MC signal	"	A18	"
11	"	"	110MC	"	No tension on tuning string	DC probe to point Ⓑ. Common to chassis.	A17	"
12	Set signal generator to 109.5MC. With tuning gang fully open, place FM tuner string and collar on gang shaft and turn collar clockwise until a maximum deflection is obtained. Secure collar. Repeat steps 9 and 10.							

FIG. 1

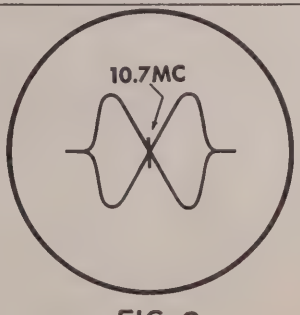


FIG. 2

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amp. - FM Conv.	6BQ7A	
V2	1st FM IF Amplifier	6BA6	
V3	AM Converter	6BE6	
V4	2nd FM-1st AM IF Amp.	6BA6	
V5	FM Limiter	6AU6	
V6	Ratio Detector	6AL5	
V7	Tuning Indicator	6DA5/EM81	
V8	AM Det. - AVC - Cathode Follower	12AU7A	
V9	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	●40	150	23B638449	AFH4-02-10	D0022	FP311.65		Q-005	TVL-4425
B	■50	150							
C	▲50	150							
C2	8	50	23A638536	PRS150V8	BBR8-150	TC41	TD-8-150	MT-1508	TVA-1405

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	10		21K640021	N750-SI 10	TCN-10	C10Q1U	NT-541	5TCU-Q1	N750
C4			20K640023						
C5	1000		21K640022	SI 1000	D6-102	LT6D1	UC-521	5HK-D1	
C6	1000		21K640022	SI 1000	D6-102	LT6D1	UC-521	5HK-D1	
C7	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	①
C8	20		21K640024	SI 20	D6-200	CTA6Q2C	ZT542	5GA-Q2	
C9	20		21K640024	SI 20	D6-200	CTA6Q2C	ZT542	5GA-Q2	
C10			20K640025						
C11	15		21K640028	SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C12	10		21K640026						N470
C13	68		21K640029	N750-SI 68	C10Q68U			5TCU-Q68	N750
C14	8		21K640027						P100
C15	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C16	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C17	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C18	.1	200	8R121573	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	①
C19	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C20	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C21	.05	400	8R121567	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C22	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C23	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	①
C24	47		21R115593	N750-DI 47	TCN-47	C10Q47U	NT-5447	5TCU-Q47	N750
C25	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C26	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C27	.1	200	8R121573	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	

① Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MOTOROLA PART No.	NOTES
R1	10K		6R6054	
R2	1meg		17K640032	
R3	10K		6R6054	
R4	1000Ω		6R6301	
R5	150Ω		6KI24797	
R6	2700Ω		6KI19926	Note 1
R7	22K		6KI19405	
R8	1000Ω		6R6301	
R9	82Ω		6KI27516	
R10	100K		6KI25534	
R11	10K		6R6054	
R12	82Ω		6KI27516	
R13	4.7meg		6KI22326	
R14	1meg		6KI24494	
R15	1meg		6KI22324	
R16	47K		6KI21687	
R17	270K		6R6414	
R18	220K		6KI22322	Note 2
R19	2.2meg		6R3927	
R20	1meg		6KI22324	
R21	1000Ω		6KI21301	
R22	47K		6KI21687	
R23	47K		6KI21687	
R24	330Ω	1	6R6254	
R25	330Ω	1	6R6254	

Note 1. Not used in some versions.
Note 2. Some versions may use 270K in this application (Part #6R6414).

TUNER PARTS LIST AND DESCRIPTIONS (cont)

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ③ .32A	270VCT ③ .040A	6.3V ③ 2.7A	25C638269						

COILS (RF-IF)

ITEM No.	USE	MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Trans.	25K640033					
L2A	FM RF Coil	24K640031					
B	FM Osc. Coil						
L3	1st FM IF	25K640034					
L4	Loop Stick	24K639493					Note 1
L5	AM Osc. Coil	24B638340	14-1073	BC-393	69-Osc.		
L6	2nd FM IF	24C638646	16-3487	FM-254	1463		
L7	1st AM IF	24C634507	16-6758	BC-352	12-C1	RF-1	
L8	3rd FM IF	24K638647					
L9	2nd AM IF	24K634508	16-6770	BC-355	12-C6		
L10	Ratio Det.	24C638488	17-3498	FM-255	1465		

Note 1. Includes cabinet back, Part #24D638361 used in Model HK-18.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Ratio Detector Circuitry	300mmf, 300mmf, 300mmf, 1000mmf, 68Ω, 1000Ω, 1500Ω, 6800Ω, 6800Ω, 68K	51B639144	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA MOTOROLA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M1		81-TB		56	*PT-2	* Not required unless original mounting mechanism is damaged.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA MOTOROLA PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2				

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Lamp	65R125595	#1847 (Alternate Type #40)
M4	FM Tuner	77D638430	UT-343 Complete
M5	AM Tuning Cap.	19B638316	Ant. 28-352mmf, Osc. 24-140mmf
M6	Switch	40C638431	Selector, Two section, Rotary Wafer Type, includes 1 SPST and 1 DPST Type

TUNER PARTS LIST AND DESCRIPTIONS (cont)

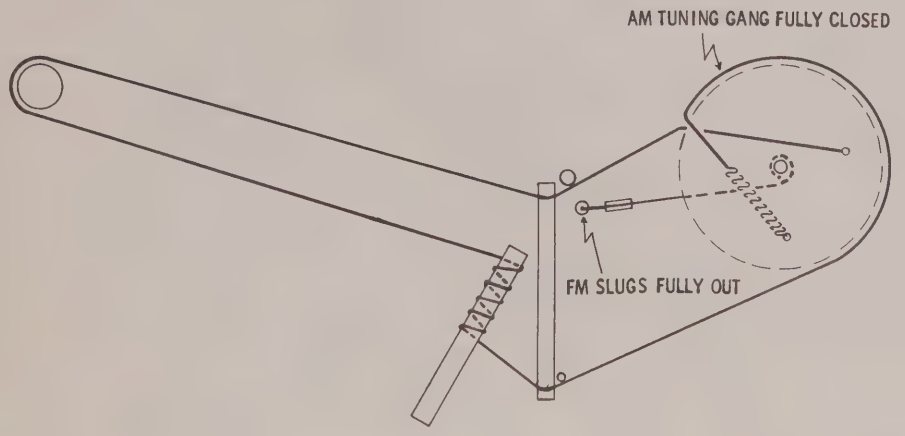
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Bezel	13K639880	
Knobs	36B638791	Model HK-19
	36K638366	Selector, Model HK-18
Knob	36K639184	Tuning, Model HK-18
Pointer	1K638233	
Dial Scale	34C638793	Model HK-19
Dial Scale	34C639409	Model HK-18
Cabinet	16K637902	Oak, Model HK-18B
Cabinet	16K639470	Cherry, Model HK-18C
Cabinet	16E637900	Mahogany, Model HK-18M
Cabinet	16K638225	Walnut, Model HK-18W

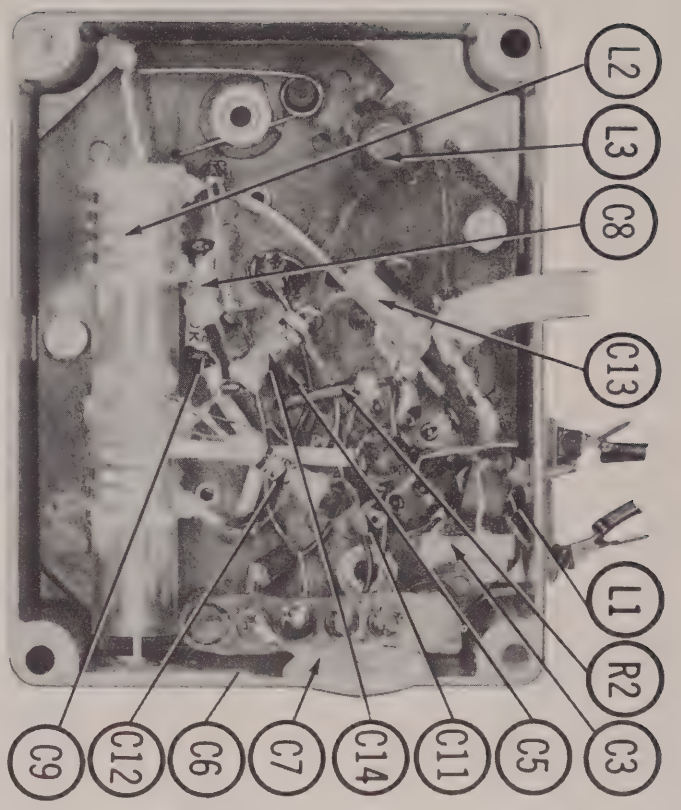
WIRING DATA

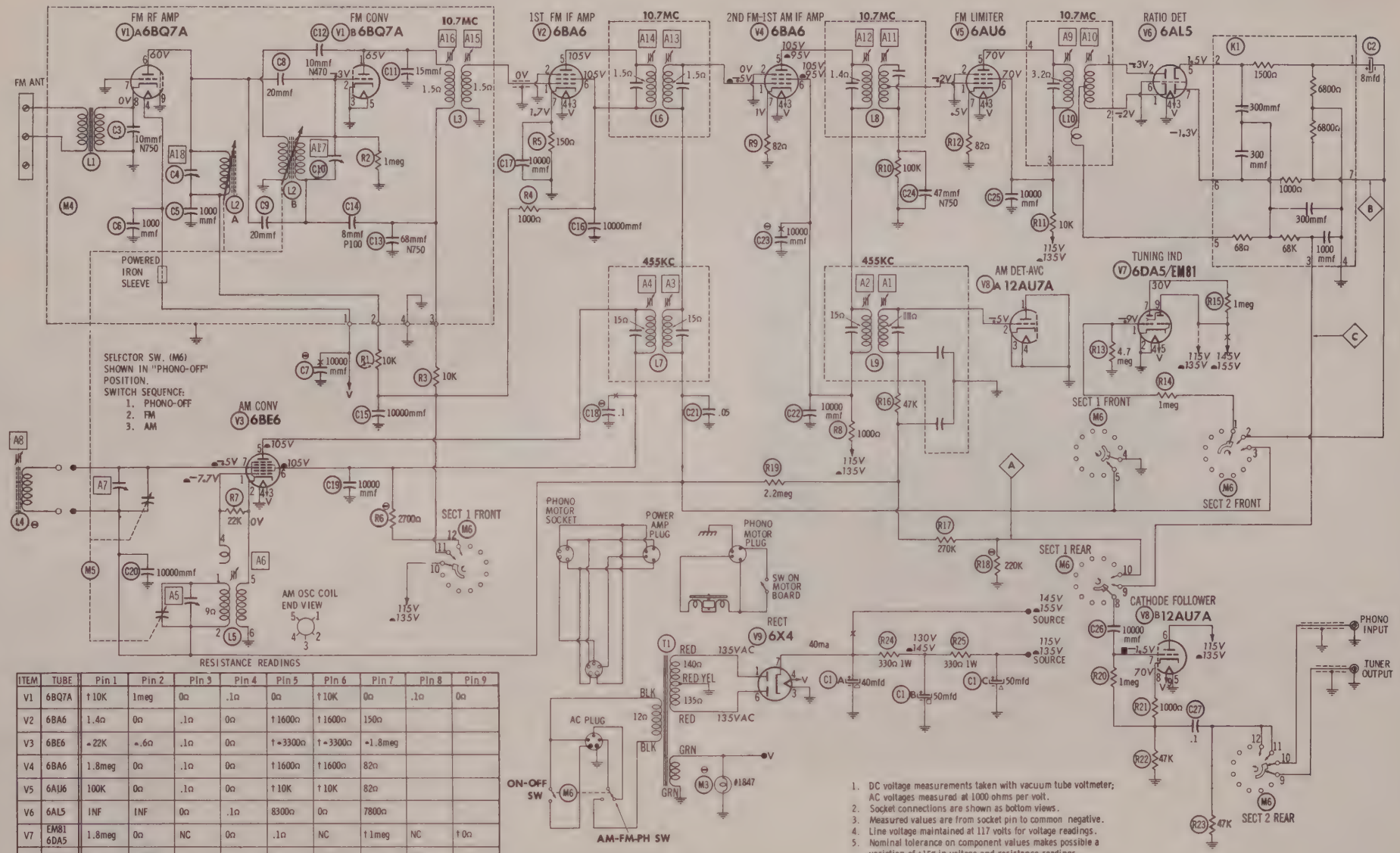
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



DIAL CORD STRINGING

FM RF SUB CHASSIS





ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BQ7A	†10K	1meg	0Ω	.1Ω	0Ω	†10K	0Ω	.1Ω	0Ω
V2	6BA6	1.4Ω	0Ω	.1Ω	0Ω	†1600Ω	†1600Ω	150Ω		
V3	6BE6	▪22K	▪.6Ω	.1Ω	0Ω	†▪3300Ω	†▪3300Ω	▪1.8meg		
V4	6BA6	1.8meg	0Ω	.1Ω	0Ω	†1600Ω	†1600Ω	82Ω		
V5	6AU6	100K	0Ω	.1Ω	0Ω	†10K	†10K	82Ω		
V6	6AL5	INF	INF	0Ω	.1Ω	8300Ω	0Ω	7800Ω		
V7	EM81 6DA5	1.8meg	0Ω	NC	0Ω	.1Ω	NC	†1meg	NC	†0Ω
V8	12AU7A	0Ω	480K	0Ω	0Ω	0Ω	†660Ω	1meg	48K	.1Ω
V9	6X4	140Ω	NC	0Ω	.1Ω	NC	135Ω	20K(Min)		

RESISTANCE READINGS

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
▪ MEASURED IN "AM" POSITION
■ MEASURED FROM PIN 8 OF V8
† MEASURED FROM PIN 7 OF V9
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

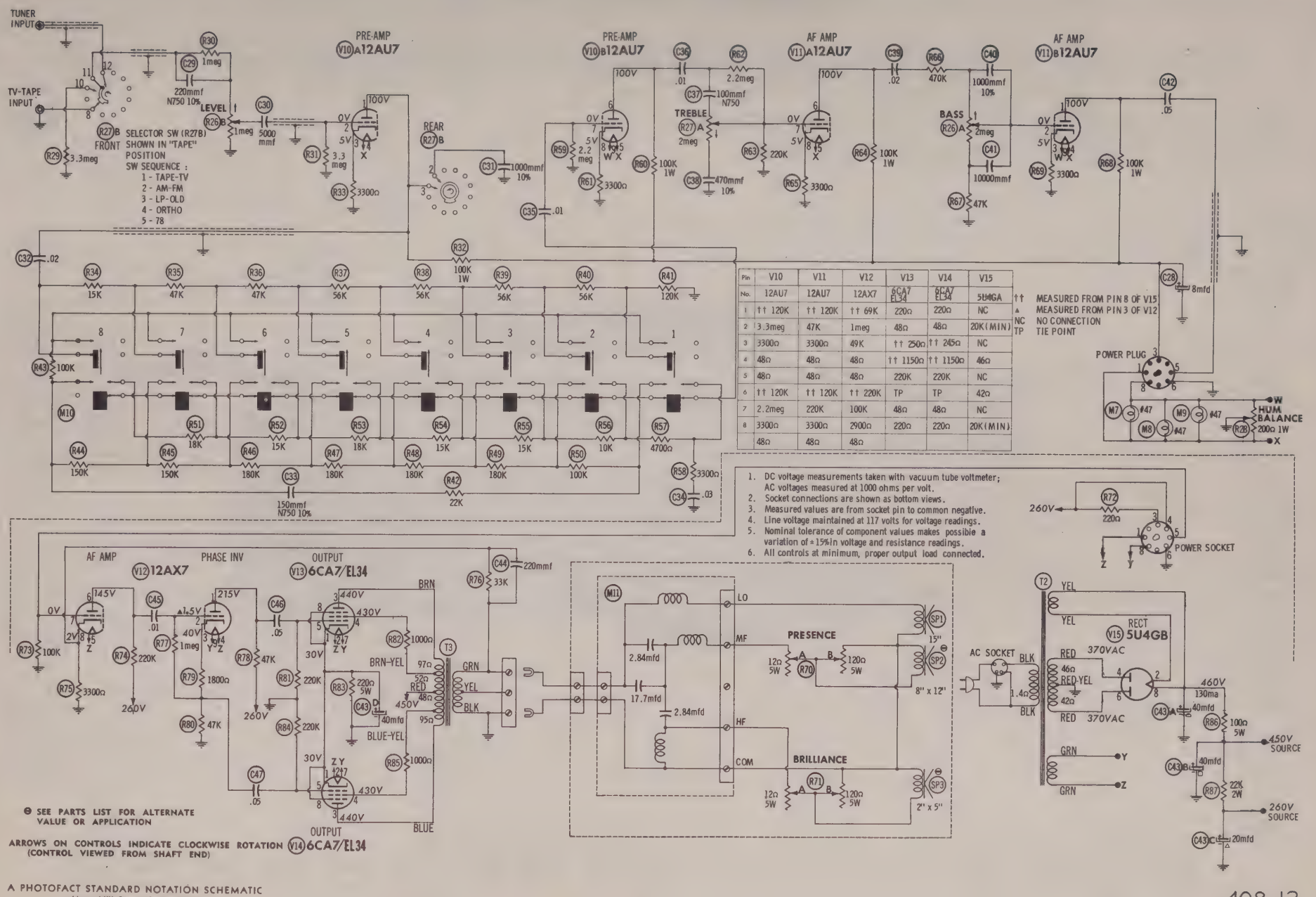
Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

Howard W. Sams & Co., Inc. 1958

408-12



Pin No.	V10 12AU7	V11 12AU7	V12 12AX7	V13 6CA7 EL34	V14 6CA7 EL34	V15 5U4GA
1	†† 120K	†† 120K	†† 69K	220Ω	220Ω	NC
2	3.3meg	47K	1meg	48Ω	48Ω	20K(MIN)
3	3300Ω	3300Ω	49K	†† 250Ω	†† 245Ω	NC
4	48Ω	48Ω	48Ω	†† 1150Ω	†† 1150Ω	46Ω
5	48Ω	48Ω	48Ω	220K	220K	NC
6	†† 120K	†† 120K	†† 220K	TP	TP	42Ω
7	2.2meg	220K	100K	48Ω	48Ω	NC
8	3300Ω	3300Ω	2900Ω	220Ω	220Ω	20K(MIN)
	48Ω	48Ω	48Ω			

†† MEASURED FROM PIN 8 OF V15
▲ MEASURED FROM PIN 3 OF V12
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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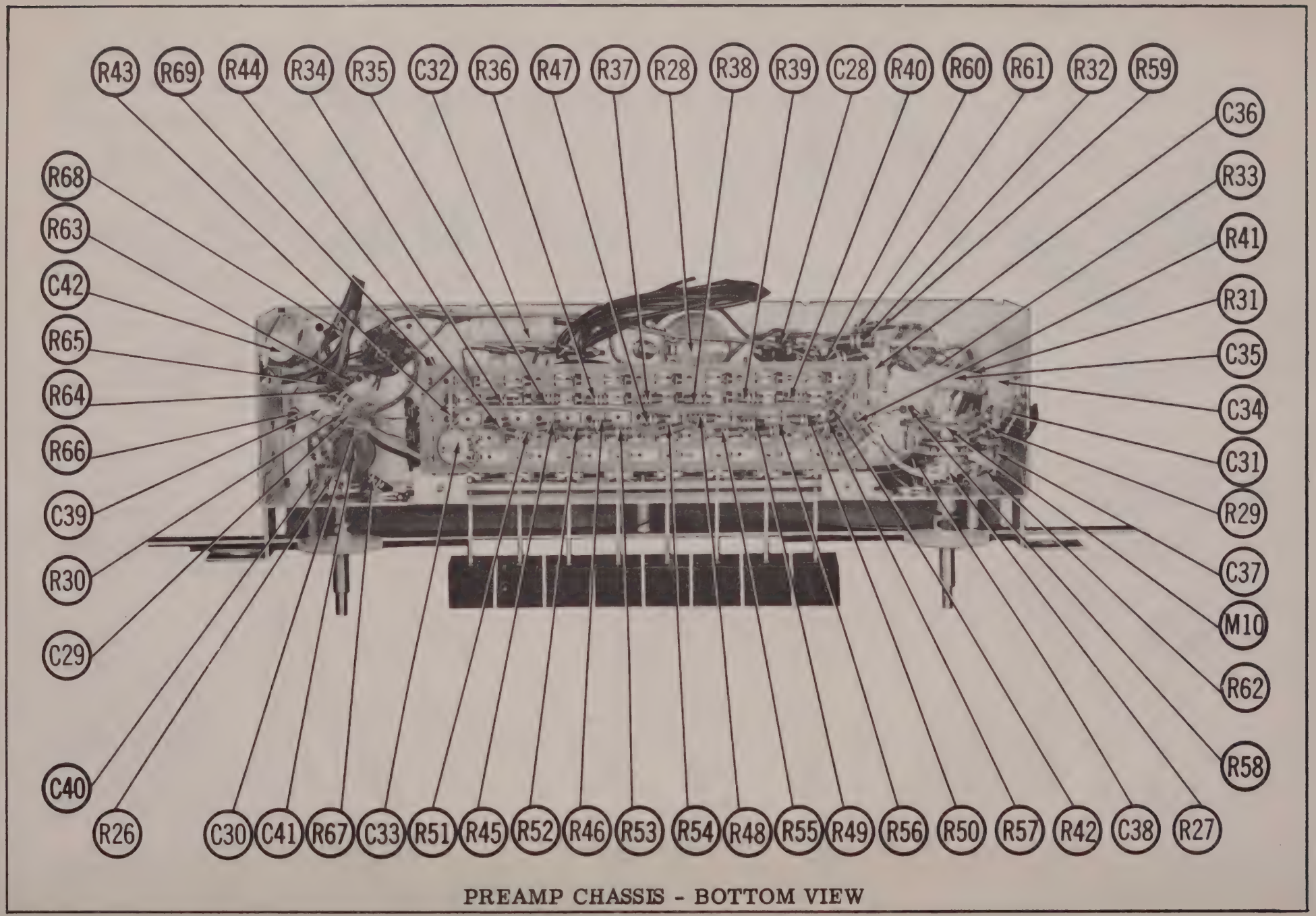
408-12



PREAMP CHASSIS - BOTTOM VIEW

PREAMP PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V10	Preamplifier	12AU7	

ITEM No.	USE	TYPE	NOTES
V11	AF Amplifier	12AU7	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C28	8	450	23B639396	PRS450V8	A0440	FP142	TD-8-450	MT-4508	R2655 *

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C29	220		21R127537	N750-DI 220	DTN-220	C10T22U		5TCU-T22	N750 10%
C30	5000		21R115312	BPD-005	DD-502		DC525	5HK-D5	
C31	1000		21A121678						10%
C32	.02	400	8R121556	P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2	
C33	150		21R121228	N750-DI 150	DTN-150	C10T15U		5TCU-T15	N750 10%
C34	.03	400	8R121574	P488N-03	DF-303	CUB6S3	GEM-413	4TM-S3	
C35	.01	400	8K734633	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C36	.01	400	8K734633	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C37	100		21R400537	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C38	470		21K121797		MD-471				10%
C39	.02	400	8R121566	P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2	
C40	1000		21A121678						10%
C41	10000		21R121946	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C42	.05	400	8R121567	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R26A	2meg	½	18B639390	F1-68				Bass
B	1meg	½		R2-52				Level
R27A	2meg	½	40C639389					Treble
B	Switch							Tone Compensation
R28A	200Ω	1WW	18K639394	WN-201	A43-200	W11-100		Hum Balance
B	Shaft			Not Req.	FKS-1/4	SK5		

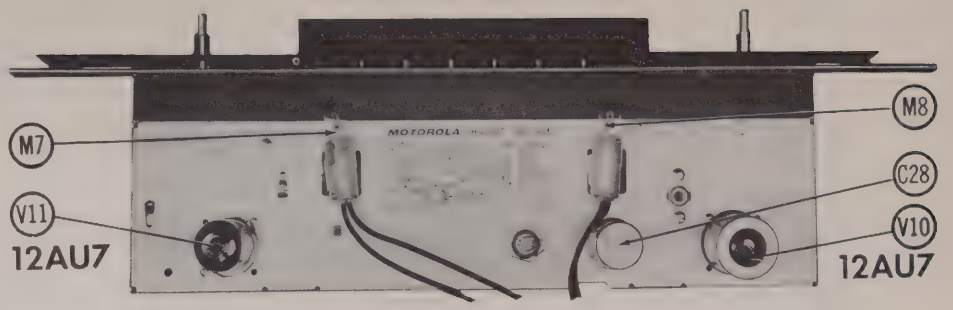
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R29	3.3meg		6K121278	
R30	1meg		6K124494	
R31	3.3meg		6K121278	
R32	100K	1	6R6328	
R33	3300Ω		6K121725	
R34	15K		6K119934	
R35	47K		6K121299	
R36	47K		6K121299	
R37	56K		6K127541	
R38	56K		6K127541	
R39	56K		6K127541	
R40	56K		6K127541	
R41	120K		6K125538	
R42	22K		6K119935	
R43	100K		6K125534	

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R44	150K		6K122323	
R45	150K		6K122323	
R46	180K		6K125531	
R47	180K		6K125531	
R48	180K		6K125531	
R49	180K		6K125531	
R50	100K		6K125534	
R51	18K		6K122848	
R52	15K		6K119934	
R53	18K		6K122848	
R54	15K		6K119934	
R55	15K		6K119934	
R56	10K		6K119932	
R57	4700Ω		6K121847	
R58	3300Ω		6K121725	

CHASSIS—TOP VIEW



PREAMP PARTS LIST AND DESCRIPTIONS(cont)

RESISTORS (cont)

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R59	2.2meg		6K127001	
R60	100K	1	6R6328	
R61	3300Ω		6K121725	
R62	2.2meg		6K127001	
R63	220K		6K122322	
R64	100K	1	6R6328	

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R65	3300Ω		6K121725	
R66	470K		6K121279	
R67	47K		6K121299	
R68	100K	1	6R6328	
R69	3300Ω		6K121725	

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M7	Lamp	65R11854	#47
M8	Lamp	65R11854	#47
M9	Lamp	65R11854	#47
M10	Switch	1V639403	Loudness, 8 Section, Slide Type (Includes C33, R34 thru R57)

CABINETS & CABINET PARTS

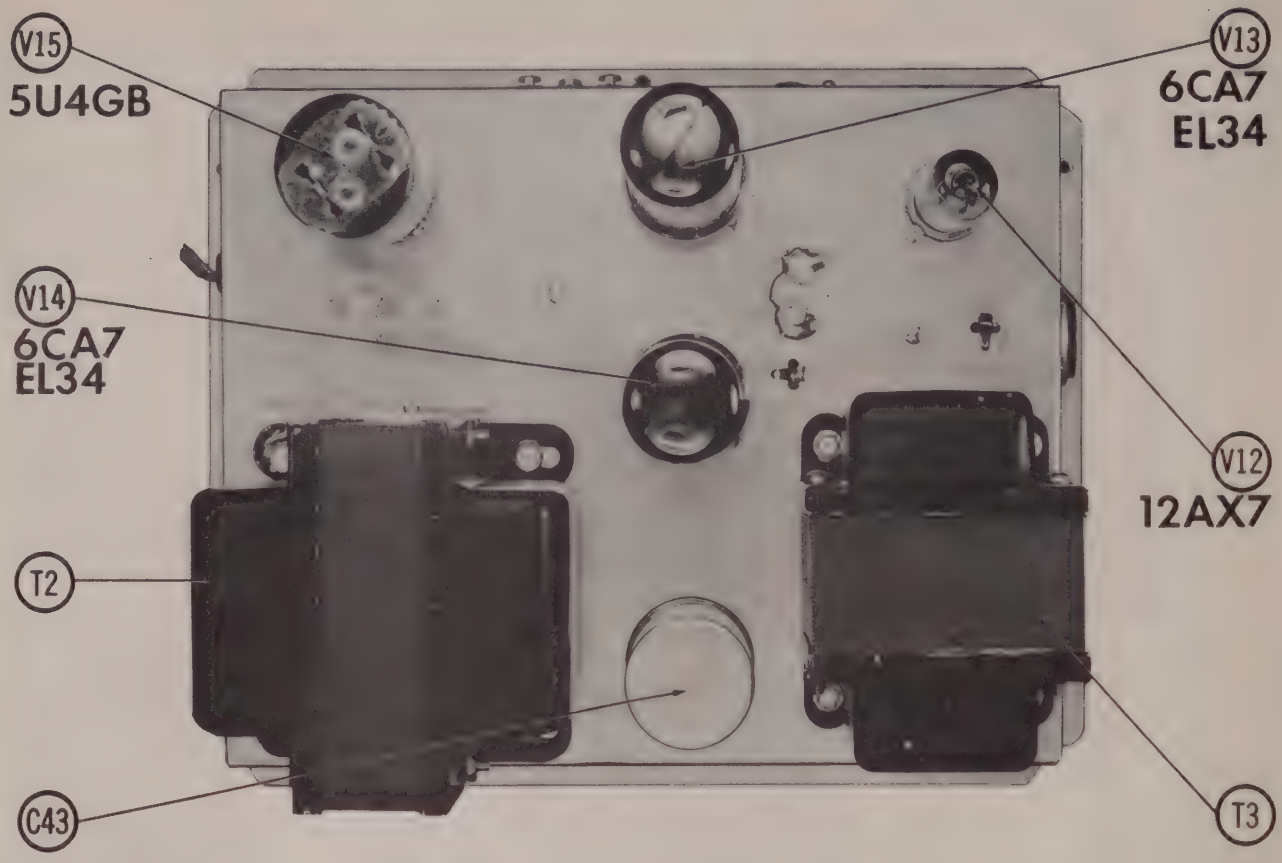
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Pushbutton	38B639423	No. 1
Pushbutton	38K639424	No. 2
Pushbutton	38K639425	No. 3
Pushbutton	38K639426	No. 4
Pushbutton	38K639427	No. 5
Pushbutton	38K639428	No. 6
Pushbutton	38K639429	No. 7
Pushbutton	38K639430	No. 8

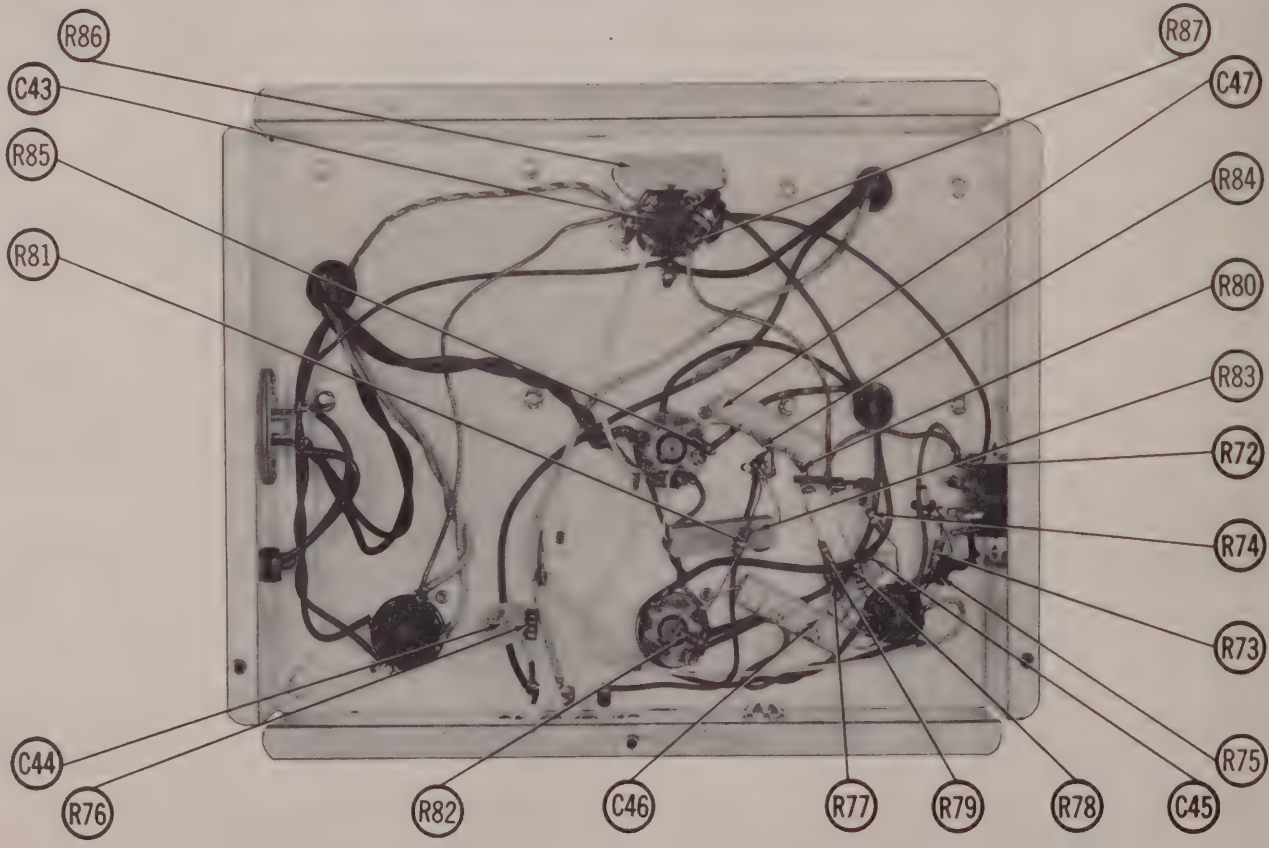
WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401



POWER CHASSIS - TOP VIEW



POWER CHASSIS - BOTTOM VIEW

POWER CHASSIS **PARTS LIST AND DESCRIPTIONS**

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V12	AF Amp. - Phase Inv.	12AX7	
V13	Output	6CA7/EL34	
V14	Output	6CA7/EL34	
V15	Rectifier	5U4GB	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C43A	▲40	475	23B639395	AFH4-18-40	C0344	FP447.5	TMQ-123	T-715	R2382 *
B	■40	450			BR505	TC32	TD-40-150	MT-4520	
C	▲20	450							
D	40	50							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C44	220		21R127537	N750-DI 220	DTN-220	C10T22U		5TCU-T22	N750 10%
C45	.01	400	8R121002	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C46	.05	400	8R122175	P488N-05	DD-503	CUB4S5	GEM-415	4TM-S5	
C47	05	400	8R122175	P488N-05	DD-503	CUB4S5	GEM-415	4TM-S5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R70A	12Ω	5WW	18B639521					Presence
B	120Ω	5WW						Presence
R71A	12Ω	5WW	18B639521					Brilliance
B	120Ω	5WW						Brilliance

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MOTOROLA PART No.	NOTES
R72	220Ω		6R6270	
R73	100K		6K125534	
R74	220K		6K122322	
R75	3300Ω		6K121725	
R76	33K		6K127632	
R77	1meg		6K124494	
R78	47K		6K121299	
R79	1800Ω		6K122445	
R80	47K		6K121299	
R81	220K		6K122322	
R82	1000Ω		6K121301	
R83	220Ω	5	17K632247	
R84	220K		6K122322	
R85	1000Ω		6K121301	
R86	100Ω	5WW	17K639433	
R87	22K	2	6K120474	

POWER CHASSIS **PARTS LIST AND DESCRIPTIONS** (cont)

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RATING SEC. 4	RATING SEC. 5	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	117V ② 1.18A	750VCT ② .130A	5V ② 2.75A	6.3V ② 4.1A			25C639391	P9316 ①			PC8411 ①	22R33 ①	R-18A ①

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	4100Ω CT Taps ② 220Ω from CT	16Ω Tap ② 8Ω	25C639392							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	15"	PM	3-4Ω	50C639471	15A10LZ4.7	① Horn type
SP2	8" X 12"	PM	13Ω	50C639472 ①		
SP3	2" X 5"	PM	9Ω	50C639473 ①		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M11	Crossover Network	25C639561	Includes (3) 730MH chokes, (2) 2.84mfd caps, (1) 17.7mfd cap

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Cabinet	16K639744	Equipment, Blond Oak, Models 15KT25B-1, 1S
Cabinet	16E639220	Equipment, Candlelight, Mahogany, Models 15KT25M-1, 1S
Cabinet	16K639730	Equipment, California Mahogany, Models 15KT25MC-1, 1S
Cabinet	16K639221	Equipment, Champagne Mahogany, Models 15KT25MCH-1, 1S
Cabinet	16K639743	Speaker, Blond Oak, Models 15KT25B-1, 1S
Cabinet	16E639260	Speaker, Candlelight Mahogany, Models 15KT25M-1, 1S
Cabinet	16K639729	Speaker, California Mahogany, Models 15KT25MC-1, 1S
Cabinet	16K639261	Speaker, Champagne Mahogany, Models, 15KT25MCH-1, 1S
Knob	36C639474	Compensator
Knob	36C639495	Speaker Level
Knob	36B639331	Tone
Knob	36K639340	Tuner
Knob	36K639477	Volume
Dial Scale	34C638680	Tuner, Model 15KT25 Series

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

*TRADE MARK

MOTOROLA MODELS 6H26S-1, -1A, 6H27B-1, -1A, 6H27W-1, -1A, 6K22B-1, -1A, 6K22M-1, -1A, 6K22MC-1, -1A, 6K22W-1, -1A, 15KT24B-1, -1A, 15KT24CW-1, -1A, 15KT24M-1, -1A, (CH. HS-606, 619, 621)

MODEL 6H26S-1A

MOTOROLA MODELS 6H26S-1, -1A, 6H27B-1, -1A, 6H27W-1, -1A, 6K22B-1, -1A, 6K22M-1, -1A, 6K22MC-1, -1A, 6K22W-1, -1A, 15KT24B-1, -1A, 15KT24CW-1, -1A, 15KT24M-1, -1A, (CH. HS-606, 619, 621)

TRADE NAME	Motorola Models 6H26S-1, 6H27B-1, 6H27W-1, 6K22B-1, 6K22M-1, 6K22MC-1, 6K22W-1 (Ch. HS-619); 6H26S-1A, 6H27B-1A, 6H27W-1A, 6K22B-1A, 6K22M-1A, 6K22MC-1A, 6K22W-1A, (Ch. HS-621); 15KT24B-1, 15KT24CW-1, 15KT24M-1 (Ch. HS-619 & HS-590*); 15KT24B-1A, 15KT24CW-1A, 15KT24M-1A (Ch. HS-606 & HS-590*)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC Operated Phono Amplifier with 4 Speed Automatic Record Changer (Models 15KT24 Series Have FM-AM Tuner*, Same Tuner Optional with 6K22 Series)
TUBES	Amplifier: 6 FM-AM Tuner * (when used): 9
POWER SUPPLY	110-120 Volts AC-60Cycle RATING .66 Amp. @117 Volts AC, 65 Watts (Amplifier only)

FOR SERVICE INFORMATION ON RECORD CHANGER SEE SIMILAR V-M 1200A—PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10.

* FOR SERVICE INFORMATION ON FM-AM TUNER CHASSIS HS-590—SEE FOLDER 12 IN THIS PHOTOFACT SET.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H480

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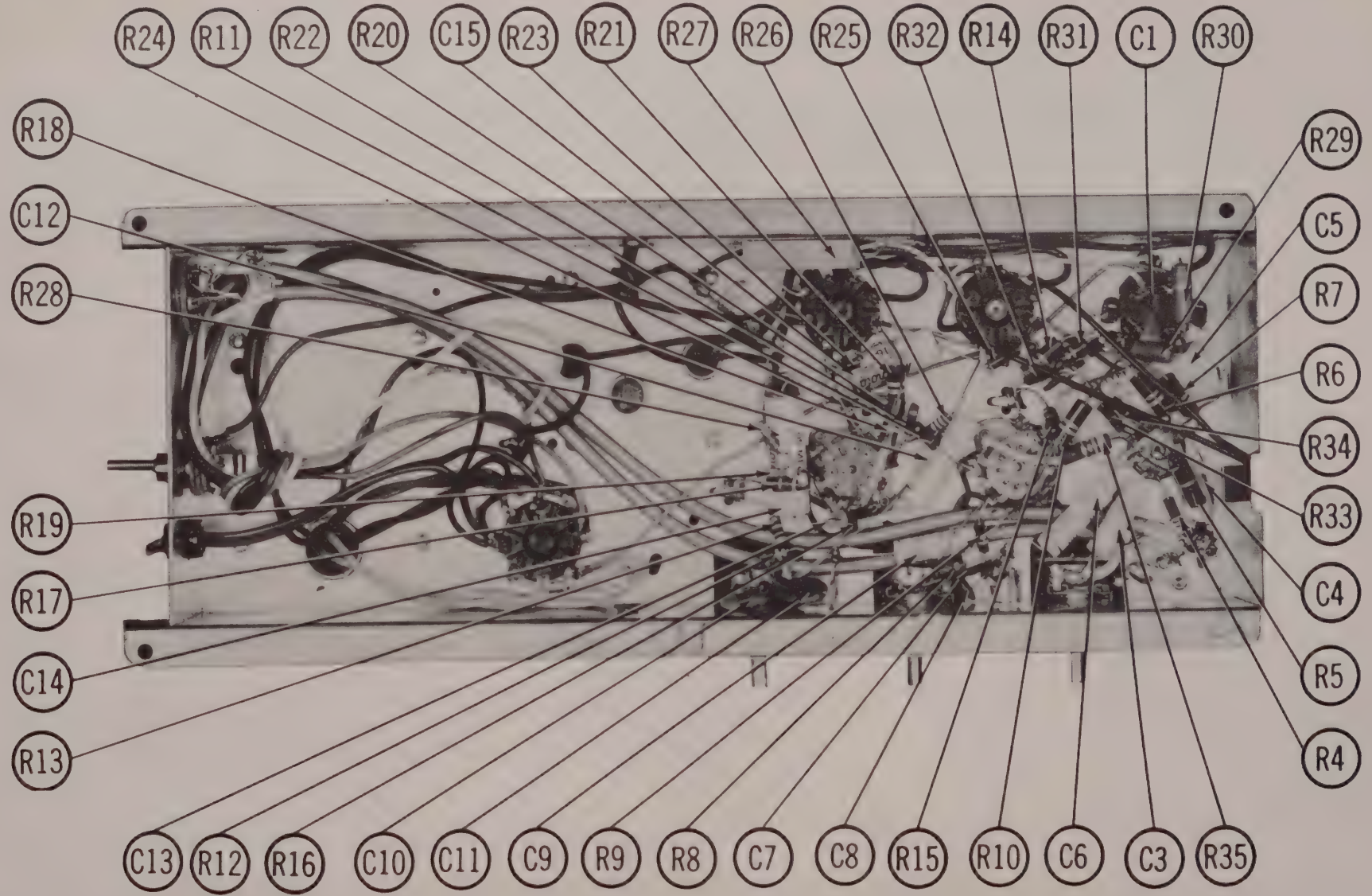


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	6AU6	
V2	AF Amplifier	12AU7A	
V3	AF Amp. -Phase Inv.	12AU7A	

ITEM No.	USE	TYPE	NOTES
V4	Output	6V6GT	
V5	Output	6V6GT	
V6	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Motorola PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	400	23B632244	AFH4-79-10	D0663.2	FP430.6	TMQ-164	Q-390	R2642*
B	■40	400							
C	▲20	400							
D	40	25							
C2	5	10VNP	23A632250	NP-PRS3b0V5	BBR10-25 † BBR10-25 †	TC22 † TC22 †	TD-10-25 † TD-10-25 †	MT-0210 † MT-0210 †	R2316*

† Connect Negative Leads Together

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Motorola PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	.01	400	8R121002	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C4	100		21R400537	N750-DI100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C5	.25	400	8R121788	P488N-25		CUB4P25	GEM-4025	4TM-P25	①
C6	.001	600	8R122103	P688N-001	D6-102	CUB6D1	GEM-621	6TM-D1	①
C7	100		21R400537	N750-DI100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C8	470		21K121797	BPD-00047	DD-471	L10T47	UC-5347	5GA-T47	
C9	.01	400	8R121002	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	②
C10	1000		21A121678	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C11	10000		21R121946	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C12	.02	400	8R121566	P488N-02	D6-203	CUB4S2	GEM-412	4TM-S2	
C13	10		21R124579	NP0-DI10	DTZ-10	C10Q1C	ZT-541	5TCC-Q1	NP0 10%
C14	.05	400	8R121567	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C15	.05	400	8R121567	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

①Chassis HS-619 use .01mfd in this application (Part # 8R121002)
②Chassis HS-619 use .02mfd in this application (Part # 8R121566)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Motorola PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1meg	½	18B632246	C1-70				Loudness, Tap @ 400K
R2A	2meg	½	18B632245	B-76	A47-2meg-Z	Q13-139	U55	Treble & 600K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	2meg	½	18B632245	B-76	A47-2meg-Z	Q13-139	U55	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

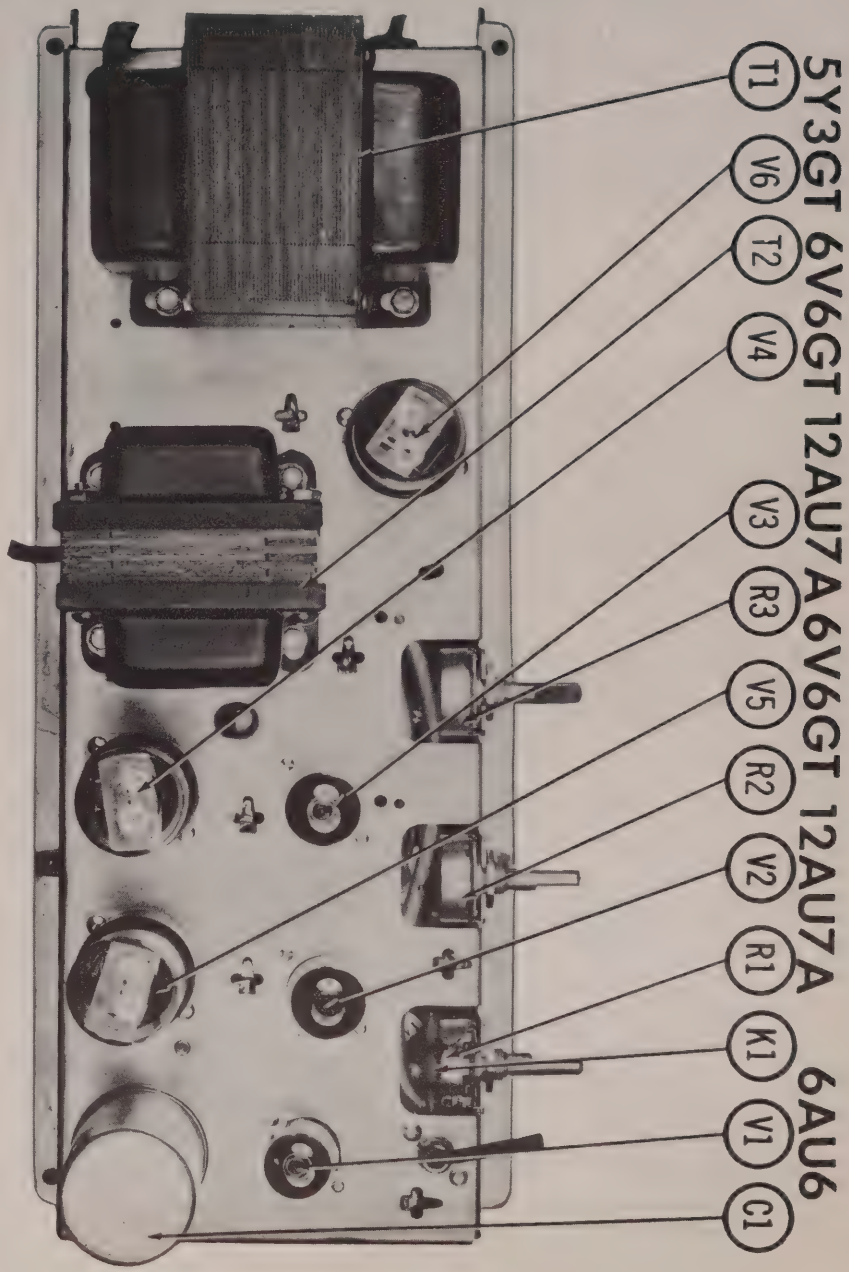
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Motorola PART No.	NOTES
R4	3.3meg		6K119407	
R5	2200Ω	1	6K125404	①
R6	100K	1	6R6328	②
R7	100K	1	6R6328	
R8	2.2meg		6K127001	
R9	220K		6K122322	
R10	100K	1	6R6328	
R11	3300Ω		6K121725	
R12	470K		6K121279	
R13	47K		6K121299	
R14	100K	1	6R6328	
R15	3300Ω		6K121725	

ITEM No.	RATING OHMS	RATING WATT	Motorola PART No.	NOTES
R16	220K		6K122322	
R17	470K		6K121279	
R18	100K	1	6R6328	
R19	4700Ω		6K121847	
R20	220K		6K122322	
R21	100K	1	6R6328	
R22	2200Ω		6R6069	
R23	100Ω		6K119402	
R24	220K		6K122322	
R25	100Ω		6K119402	
R26	330K		6R2096	
R27	220Ω	25	17K632247	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	Motorola PART No.	NOTES
R28	5600Ω		6R6117	
R29	22K	1	6R6289	
R30	1200Ω	1	6R5770	
R31	820K		6R6429	
R32	150K		6R6182	
R33	27Ω		6B119401	
R34	27Ω		6B119401	
R35	3.3Ω	1	17K485412	③

①Some versions may use 1000Ω in this application (Part # 6R6327)
②Some versions may use 330K in this application (Part # 6K125793)
③Not used in chassis HS-619

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Motorola PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @.66A	600VCT @.090A	5V @1.8A	25C638551	P9304			P-8175①	22R04②	
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @2A									

① Drill new mounting holes.
②Use original shields

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Motorola PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6700Ω CT	6-8Ω	25C632258	Z1405			A-3304	22S68		

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Motorola PART No.	QUAM PART No.	NOTES
SP1	8"	PM	6-8Ω	50C636447①	8A6PA	①Used in 6H26 Series Only
SP2	4"	PM	6-8Ω	50C636446②	4A1Z6	②Used in 6H26 and 6H27 Series Only
SP3	4"	PM	6-8Ω	50C636446②		③Used in 6H27 Series Only
	8"	PM	6-8Ω	50K636707③		④Used in 6K22 and 15KT24 Series Only
	15"	PM	6-8Ω	50C632259④	15A10LFO	
	5 1/4"	PM	16Ω	50K638576④		
	5 1/4"	PM	16Ω	50K638577④		
	5"	PM	6-8Ω	50C638562④		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Motorola PART No.	REPLACEMENT DATA	
K1	Tone Compensation	50mmf, 100mmf, 2500mmf 2500mmf, 100K, 100K.	Part of R1	Centralab Sprague	PC-325 TC-5

PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA Motorola PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M1		81-TB		56	*PT-2	* Not required unless original mounting mechanism is damaged.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA Motorola PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2				

MISCELLANEOUS

ITEM No.	PART NAME	Motorola PART No.	NOTES
M3	Lamp Lamp	65R125595 65R127527	#40 Some versions may use 3 #1847 Model 15KT24 Series only (3 used)

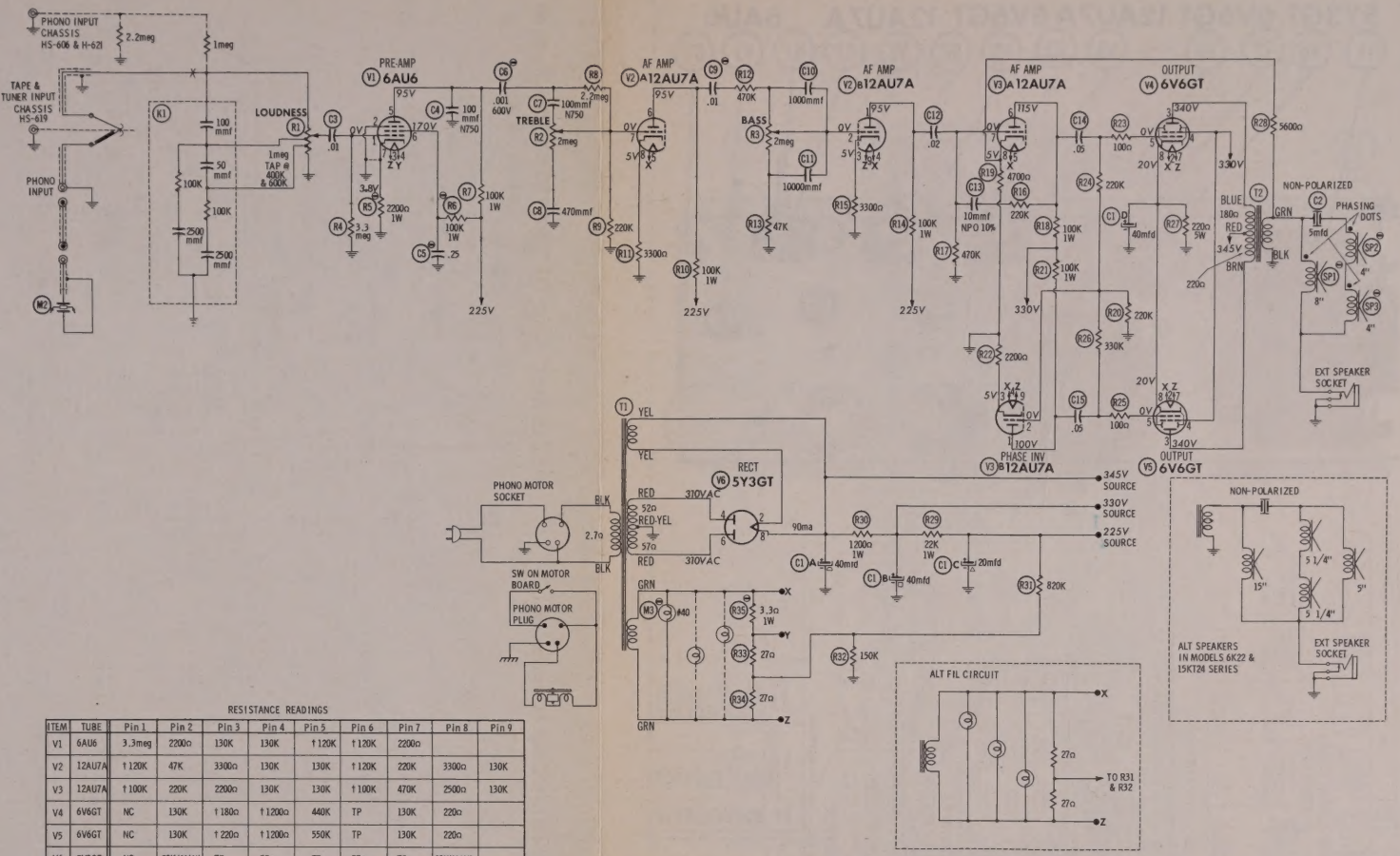
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36K638392	Model 6H26S Series
Knob	36K638945	Blue Insert, Model 6H27-1, 6H27-1A, 6K22-1, 6K22-1A
Knob	36K638944	Red Insert, Model 6H27-1, 6H27-1A, 6K22-1, 6K22-1A
Knob	36C638940	Silver Insert, Model 6H27-1, 6H27-1A, 6K22-1, 6K22-1A
Knob	36K639324	Amplifier, Model 15KT24 Series
Knob	36K639340	Tuner, Model 15KT24 Series
Cabinet	16E638865	Tan, Less Escutcheon & Aluminum Trim, Model 6H26S Series
Cabinet	16E638920	Swedish Oak, Complete, Less Escutcheon, Model 6H27B-1, 6H27B-1A
Cabinet	16K638921	Walnut, Complete, Less Escutcheon, Model 6H27W-1, 6H27W-1A
Cabinet	16K638861	Swedish Oak, Complete, Less Escutcheon, Model 6K22B-1, 6K22B-1A
Cabinet	16E638860	Imperial Mahogany, Complete, Less Escutcheon, Model 6K22M-1, 6K22M-1A
Cabinet	16K638862	Calif. Mahogany, Complete, Less Escutcheon, Model 6K22MC-1, 6K22MC-1A
Cabinet	16K638863	Walnut, Complete, Less Escutcheon, Model 6K22W-1, 6K22W-1A
Cabinet	16K638881	Swedish Oak, Complete, Less Escutcheon and Bezel, Models 15KT24B-1, -1A
Cabinet	16K638882	Cherry, Complete, Less Escutcheon and Bezel, Models 15KT24CW-1, -1A
Cabinet	16K638880	Imperial Mahogany, Complete Less Escutcheon & Bezel, Models 15KT24M-1, -1A
Handle	55K636384	Carrying, Model 6H26S Series

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU6	3.3meg	2200Ω	130K	130K	†120K	†120K	2200Ω		
V2	12AU7A	†120K	47K	3300Ω	130K	130K	†120K	220K	3300Ω	130K
V3	12AU7A	†100K	220K	2200Ω	130K	130K	†100K	470K	2500Ω	130K
V4	6V6GT	NC	130K	†180Ω	†1200Ω	440K	TP	130K	220Ω	
V5	6V6GT	NC	130K	†220Ω	†1200Ω	550K	TP	130K	220Ω	
V6	5Y3GT	NC	20K(MIN)	TP	52Ω	TP	57Ω	TP	20K(MIN)	

† MEASURED FROM PIN 8 OF V6
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958